

WINTER 2003

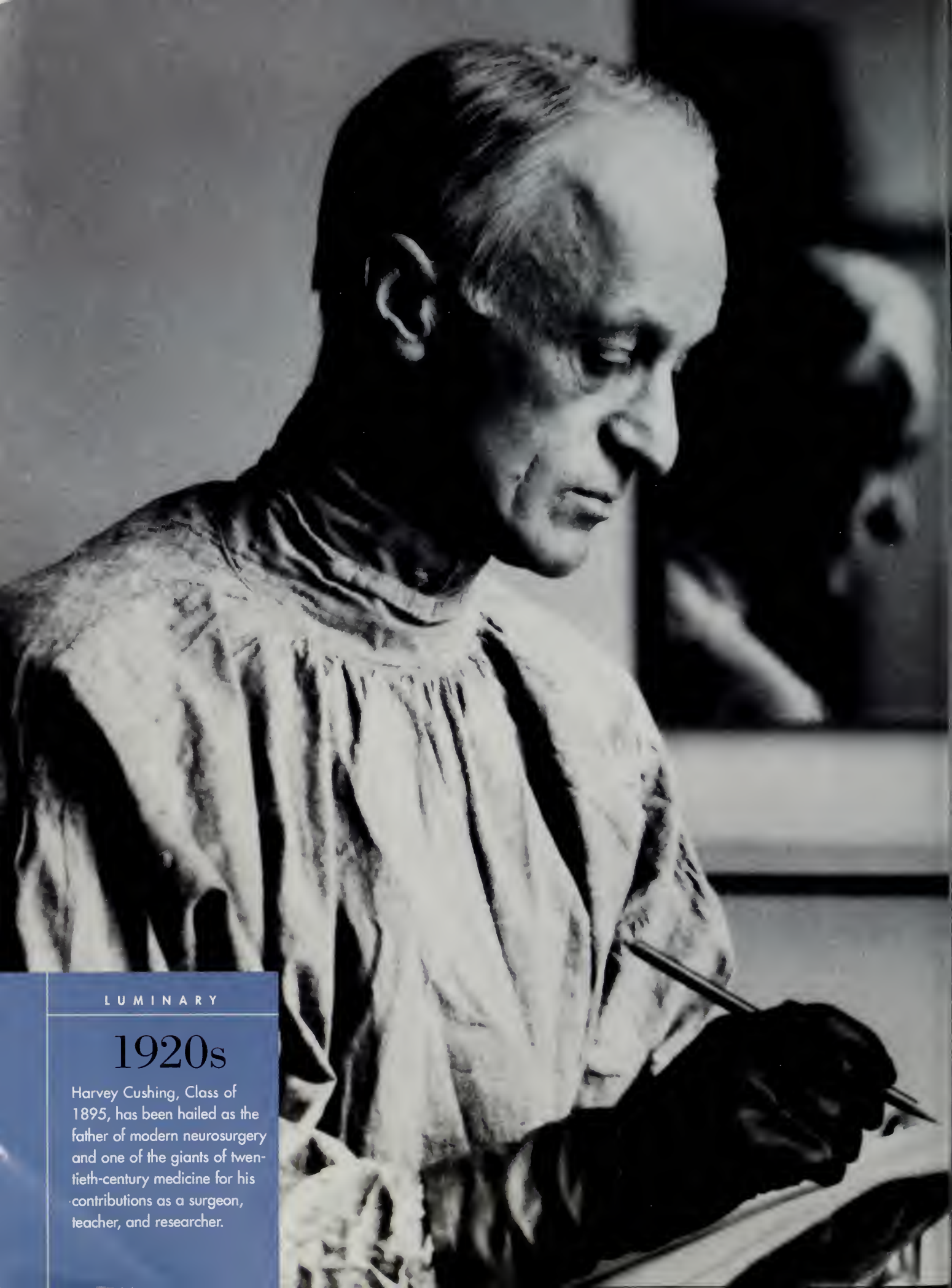
Harvard Medical

ALUMNI BULLETIN

The
art

OF TOUCH
IN HEALING





LUMINARY

1920s

Harvey Cushing, Class of 1895, has been hailed as the father of modern neurosurgery and one of the giants of twentieth-century medicine for his contributions as a surgeon, teacher, and researcher.

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by STERLING HAYNES

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In This Issue



ALL OF THE FIVE SENSES HAVE DIAGNOSTIC POTENTIAL IN MEDICINE, AND ALL five have been at least partly augmented or replaced by technological proxies. Two of the senses, taste and smell, are essentially obsolete in diagnosis—even when one grants that taking a good whiff of an unconscious patient is always worthwhile. But neither smell nor taste could ever provide information as specific as a stat chemistry result. I doubt whether the most staunchly traditional physician feels that his or her identity has been substantially eroded by a clinical laboratory, and medical information arriving in either the olfactory or gustatory modality is quite likely to provoke the reflex of disgust.

Hearing, by contrast, remains central to both the reality and the symbolism of the physician's diagnostic role. The stethoscope instantly identifies a cartoon doctor, and there is much about the device that can be used to advertise one's rank, role, and seriousness in the profession: color (pastel tubing means lower status); location (draped around the neck means busy and very serious); construction (multiple bells and diaphragms means extra competent). Nevertheless, as someone who always had to struggle to get the ear pieces firmly sealed and then could not reliably distinguish between "Kentucky" and "Tennessee," I would have happily sacrificed that bit of status for an easily ordered echocardiogram.

Vision seems to me the least fraught of the diagnostic senses. What the clinician garners from looking at the body's outer surface remains as valuable as ever, and imaging technology developed in the last hundred years has wonderfully extended our optic reach. Few but the most nervous will, I think, worry that technology is leading to an era when patients will be led to a room full of imaging devices while the physician remains in another room connected only by high-speed data lines.

Touch is, in many ways, the most morally complicated of the senses because it is never a merely sensory activity; it is action as well. We touch patients for diagnostic information, but privileged touch carries disturbing implications of authority, aggression, coercion, and eroticism, as well as reassurance, nurturance, protection, and affection. This issue of the *Bulletin* explores aspects of touch as a diagnostic and healing act in medicine.

* * * * *

Gordon Scannell '40, editor of the *Bulletin* from 1981 to 1994, died last August. In this issue George Richardson '46, Gordon's predecessor as editor, remembers Gordon and his life. Gordon brought a gentle and generous personality to his role as editor of the *Bulletin* as he did to so many of his other pursuits. He was learned but wore his learning lightly. His interests were wide ranging, and his humor droll. His was a graceful stewardship of the *Bulletin*, and he was warm and supportive to his successor. We miss him and are grateful for his guidance.

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Crimson Pride

I just read your 75th anniversary issue. It's so wonderful! You make me proud to be connected with HMS.

LESTON HAVENS, MD
CAMBRIDGE, MASSACHUSETTS

High Interest Rating

Your 75th anniversary issue was wonderful. Over the years, at social gatherings, hospital cafeterias, committee meetings, and boardrooms, I've often found doctors as a group—no matter how competent or even brilliant—to be a dull bunch. Discussions of politics, books, aesthetics, and values that were lively in a mixed gathering have turned leaden when conducted among doctors only. The *Bulletin* regularly refutes all that, however, and the 75th anniversary issue finally proved that I've just been talking to the wrong people.

We can be proud that, apart from medicine, HMS graduates are pretty interesting people after all. Nevertheless, I think we could be even more interesting—and possibly more humane—if the admissions process took seriously the famous suggestion by a distinguished HMS alumnus, the late Lewis Thomas '37, that medical schools not consider anyone who majored in science in college.

JAMES S. BERNSTEIN '52
ROCKVILLE CENTRE, NEW YORK

Worth the Wait

A few days ago in a Newton doctor's waiting room, I picked up the summer issue of the *Bulletin*. Venerable indeed! Mrs. Monahan and I are not doctors but neither of us could put it down until we had read it, with great joy and enlightenment, from cover to cover.

ROBERT MONAHAN, SR.
PARSONSFIELD, MAINE

All Shook Up

Great issue! You and your staff are terrific writers and editors. Perfect for the old stodgy school.

ANTHONY PATTON '58
DANVERS, MASSACHUSETTS



PRESSED TO KILL

YOUR 75TH ANNIVERSARY ISSUE STIRRED UP MANY MEMORIES. THE clinical encounters described in "The Art Is Long" in particular reminded me of one of my own experiences. It took place around 1960, at a time when I was just getting settled into my practice. A man had been referred to me with an acute inflammation of the gall bladder, which I removed. He recovered, and on his very last visit to my office in Brookline, he held out his hand, thanked me, and said, "I see that Blue Shield paid you \$350 for my operation. Please let me know what more I owe you. I'm pleased with the good job you did, and I want to settle my account."

"I accept Blue Shield payments," I replied, "and there's nothing more you owe me. Thanks for your offer, but we're settled in full."

"That's nuts!" he said. "You saved my life, and all you get is 350 bucks? I don't understand it, but if that's the way you do business, okay."

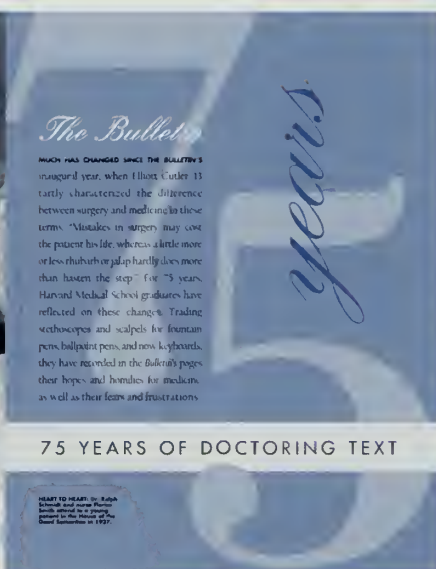
He left the office but returned almost immediately. After closing the door, he looked me square in the face and said in a low voice, "I have a special business, and perhaps I can repay you in that way. Is anybody bothering you? Is anybody on your back? What I mean to say is, would you like anybody rubbed out?"

With a short gasp, I managed to get out, "No, no thank you!"

Before I could say anything more, he added, "How about your wife?" Mouth agape, I shook my head.

"Okay, then. I appreciate what you did, and I just wondered if you might need my help." He held out his hand, I did the same, we shook hands, then he turned and left. I never saw him again. I can't remember his name now, but I've thought of him more than once, though I've never wished him to come back to do a job for me.

JOHN L. ROWBOTHAM '46
FRANCONIA, NEW HAMPSHIRE



75 YEARS OF DOCTORING TEXT

A Touch of Class

What a great issue, all the way through! You truly captured and set forth with clarity the history of the past 75 years at HMS.

The older I've grown, the more important the *Bulletin* has become. I was most impressed with the amount of material you covered in the 75th anniversary issue and how well you attached it to the nation at the time. Any of us who were extant throughout the period cannot help but see how well you covered the years. Many thanks for bringing us all up-to-date as well as taking us for a good ride backward.

HENRY H. WORK '37
BETHESDA, MARYLAND

Keeping the Faith

I enjoyed the contents, the incisive wit and wisdom, the illustrations, the vintage advertisements, the quizzes, and the innovative organization of the 75th anniversary edition. The play on words in the cover title—"making house calls for 75 years"—was a nice touch, because the *Bulletin's* visits are very welcome and much appreciated.

I would like to offer an inspirational prayer that seems to resonate with the lives of the great physicians who were

honored in this edition. The prayer—by Sir Robert Hutchinson, a renowned physician and teacher—has been a beacon of hope and source of strength for me:

"From an inability to let alone; from too much zeal for the new and contempt for what is old; from putting knowledge before wisdom, and science before art and cleverness before common sense; from treating patients as cases; and from making the cure of the diseases more grievous than the endurance of the same, Good Lord deliver us."

Hats off to all those who made this issue possible and deep appreciation for the satisfying experience of reading it.

VELANDY MANOHAR, MD
HADDAM, CONNECTICUT

Training Daze

I enjoyed the letter of John Cadigan '53 in the Summer 2002 issue about the military scene at HMS during World War II. In the interest of historical accuracy, however, I feel it necessary to make a small correction.

The first commanding officer of the Army Specialized Training Program unit at HMS was Captain Russell Fairbanks, an artillery officer and product of the Harvard ROTC program. To put it mildly, his efforts to convert Vanderbilt Hall to West

Point on the Circle of Tugo were not always appreciated by the student-soldiers. It was he, and not Major Jerome Rosengard, who exhorted the troops at a morning formation to "make this the best damned medical school in Boston." Someone in his audience had a friend on the staff of the *New Yorker*; and Fairbanks's plea was subsequently published in "Talk of the Town." Its publication did not contribute to furthering a warm and fuzzy relationship between Captain Fairbanks and the students. A direct approach to the War Department by Harvard administrators eventually resulted in his transfer.

Captain Fairbanks was replaced by Major Rosengard, a large, jovial obstetrician from the Chicago area, who came to HMS from a tour of duty in Iceland. Rosengard remained in command for the duration and was universally beloved. As an indication of his popularity, the plot of the December 1943 Aesculapian Club show had the Harvard Unit serving with him in Iceland. (The hit song was "The Fur-Lined Joekstrap Will Save the Day.")

Admittedly, my comments are secondhand; I arrived at HMS in January 1944 and, moreover, was in the Navy V-12 unit. The facts, however, are vouched for, as recently as this morning, by my brother, Louis Selverstone '44, who lived through it all.

NORMAN J. SELVERSTONE '47
CAMBRIDGE, MASSACHUSETTS

Rise and Fall

Recent *Bulletin* articles detailing the experiences of HMS alumni who served in World War II have reminded me of my own wartime encounter with one of medicine's most enigmatic figures.

Ferdinand Sauerbruch was, in the years following World War I, probably the most famous surgeon in Europe. He had developed a procedure to make skin tunnels under the flexor and extensor muscle groups of the forearm in patients who had undergone amputation of the hand. Wooden pegs placed through the healed skin tunnels were attached to wires, which in turn were attached to a prosthetic hand. The flexion and extension of

the arm muscles would produce movement of the pegs, which would open and close the fingers of the prosthesis, which became known as "the Sauerbruch hand."

In 1933, Sauerbruch welcomed Hitler's assumption of power. Over time, he operated on many important Nazi officials, including Joseph Goebbels and President Von Hindenburg. But eventually he grew disillusioned with Hitler, confiding to friends his opinion that the Führer was "unquestionably out of his mind."

Following the war, Sauerbruch underwent the de-Nazification process by the Allied powers and was reinstalled as chief surgeon of the Charité, the largest hospital in Berlin. By 1946, Sauerbruch was back in business. That same year, I was assigned as a chief of anesthesia at the U.S. Army 279th Station hospital in Berlin. One morning the commanding officer of the Charité arranged for members of my hospital's surgical staff to attend a clinic presented by Sauerbruch.

Our group was led to a large surgical suite with three operating tables. On the central table lay a woman with a large goiter, which Sauerbruch planned to remove using local anesthesia. After about 15 minutes of waiting, a hush fell over the room. My interpreter whispered, "He is coming!" Sauerbruch entered, trailed by a large retinue of doctors and nurses. He had apparently already scrubbed and

went directly to the table, where he put on his gown and a pair of thin cotton gloves, explaining to us as he did so that rubber gloves were unavailable.

He proceeded to make a long "collar" incision across the patient's neck. He then dissected the skin flaps by inserting one hand under the slightly dissected upper flap and the other hand under the edge of the lower flap. He pulled on these with great force, raising both flaps about two inches. At that moment, the patient shrieked in obvious pain.

Sauerbruch reprimanded her in a harsh tone, after which the patient did not utter another sound. "What did he say to her?" I whispered to the interpreter. "He said," the interpreter relayed, "'Hush, woman! Don't you know that this is Sauerbruch operating on you?'"

After a few minutes, Sauerbruch's cotton gloves became saturated with blood. Muttering an oath, he stripped them off and finished the operation barehanded. The huge goiter involved both lobes of the thyroid, but he had it out after about 20 minutes, then turned the rest of the operation over to his assistants.

Sauerbruch then turned his attention to the next patient—a veteran whose old wound had developed a femoral arteriovenous fistula. He ligated the artery and vein and all their branches, working meticulously for about an hour.

As soon as he finished that operation, Sauerbruch moved to the third patient—a war amputee—constructing skin tunnels for the eventual fitting of a "Sauerbruch hand." Following this virtuoso performance, we were escorted to an amphitheater where Sauerbruch had assembled a group of his former patients, all of whom displayed spectacular surgical results. Sauerbruch then made a plea for help from the Americans, as his hospital lacked many of the bare medical necessities. Unfortunately, we were all restricted by an order of "no fraternization" with the Germans.

Sadly, just a year after this encounter, Sauerbruch began showing signs of dementia, to the point that he became a dangerous surgeon. Yet the esteem in which the German people held him enabled him to continue operating for another three years.

Sauerbruch died in 1951 and was buried wearing a surgical gown with a stethoscope clasped in his hands.

ROBERT MCBURNEY '43B
MEMPHIS, TENNESSEE

The Bulletin welcomes letters to the editor. Please send letters by mail (Harvard Medical Alumni Bulletin, 25 Shattuck Street, Boston, Massachusetts 02115); fax (617 384 8901); or email (bulletin@hms.harvard.edu). Letters may be edited for length or clarity.



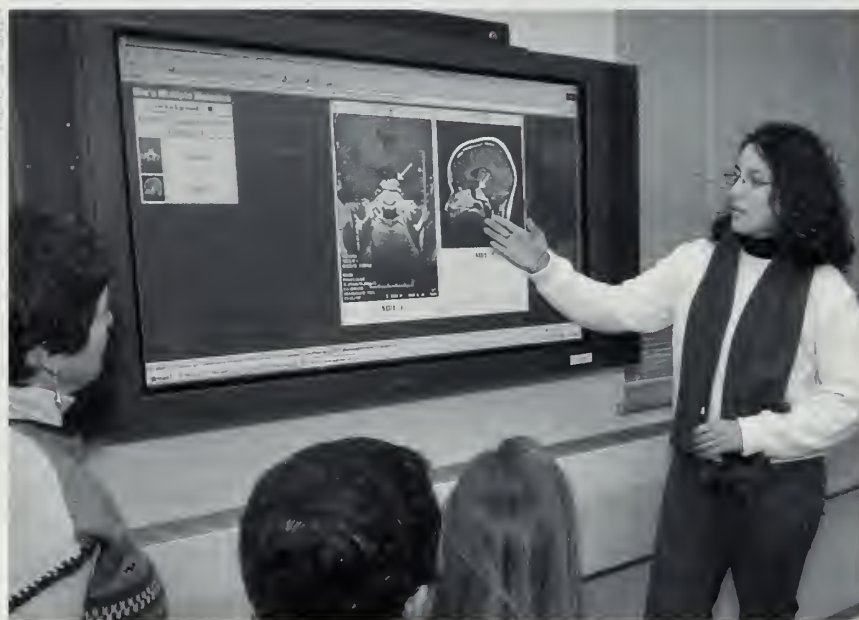
LARGER THAN LIFE

IMAGINE MY ASTONISHMENT AND DELIGHT AT OPENING MY COPY OF THE *BULLETIN* (which I've been receiving with pleasure ever since my father returned for his second tenure as editor in 1967) and finding my father, Joseph Garland '19, there—full face, full page—about to deliver one of his "whimsical understatements."

As the wheel happens to turn, I recently delivered the annual Garland Lecture at the Boston Medical Library, on the subject "The Global Reach of a Gloucester Boy: Joe Garland and the *New England Journal of Medicine*, 1922–1967"—a period that also spanned his two tenures with the *Bulletin*, which gets better by the issue, and editor.

JOSEPH E. GARLAND
GLOUCESTER, MASSACHUSETTS

The Educational Virtue of Virtual Education



ACROSS THE BOARD: Anjelica Garza '06 makes use of a high-definition plasma screen, a new tool in the era of technology-based learning.

A COMBINATION OF DAZZLING hardware and seamless software is transforming the educational experience for HMS students—and turning the MyCourses Web platform into a virtual nexus of teaching and learning.

Recently installed into each of the 27 tutorial rooms in the Tosteson Medical Education Center are 50 inch, high-definition plasma display screens along with wireless keyboards and mice. To complement the new hardware, “We’ve added new software to MyCourses that Web-enables the entire tutorial process,” says John Halamka, chief information officer at HMS and associate professor of medicine at Beth Israel Deaconess Medical Center. “MyCourses empowers tutorial faculty to share multimedia resources with students in a way that fosters student and faculty interaction. Additionally, faculty can use MyCourses to evaluate student tutorial performance, run forums to

clarify and reinforce the knowledge gained in tutorials, and exchange email with their students.”

Although the School’s Web based educational resources have steadily expanded in scope and quality, until recently their application has been limited largely to individual use by students outside the classroom. The new technology allows students to access this wealth of material in the eight-student tutorials and other group settings.

“Now we are not only using MyCourses as a supplement to classroom learning, but it has actually become part of classroom learning,” Halamka says. “We’re able, for example, to bring up microscopy slides, videos of patients describing their own diseases, or the latest literature from the *New England Journal of Medicine*. MyCourses has become the way we deliver knowledge both inside and outside the classroom.” The site is now accessed more than 40,000 times a day.

Amy DiAdamo, a course manager for Year I courses, says the system’s designers were careful to preserve the sense of community and confidentiality that characterizes the tutorial environment. “Once the tutorial group comes into the room, it’s all about the students and their relationship with the tutor, and we mimic that with MyCourses,” she says. No one but the tutor and students can access a tutorial group’s private page, which opens with the names and photos of each group member. Recognizing that each tutorial has unique needs and teaching methods, the system’s developers also built in flexibility. For example, tutors can control the timing of when students see each section of content and add any supplemental material they choose.

In addition to the tutorial room hardware, recent enhancements to MyCourses include: Search, a function that can search every resource, event, and announcement in MyCourses by keyword; MyStorage, a feature that enables students and faculty to upload and retrieve files via the Web from anywhere in the world and provides a 50-megabyte, secure personal storage area; MyWeb, which allows students to upload and manage personal Web pages; Link Manager, which makes managing HMS and personal links on MyCourses easier; and Document Writer, a Web-based version of Microsoft Word that allows students and faculty to write complex documents without needing any software outside their Internet Explorer Web browser.

“Improving and updating our tutorial system is a key element of the curriculum reform we are now undertaking at Harvard Medical School,” says HMS Dean Joseph Martin. “The evolution of MyCourses as both an individual and a group teaching tool is a wonderful example of how technology can help us achieve this goal.” ■

Tom Reynolds is a writer in the dean’s office at Harvard Medical School.

Reaching Out to Teachers

FOURTEEN-YEAR OLD "TINA" WAS a fictional patient in teacher Heather Cabrera's science class last fall at New Mission High School in Roxbury. But Tina, whose breathing troubles began with asthma and ended with pneumonia, offered real life lessons. One day, when Cabrera's seniors were learning how to take their respiratory rates, they discovered they had worse numbers than Tina on her sickest days. "More than half of my kids have asthma," says Cabrera, a participant in the HMS Teachers Institute. "Roxbury has one of the highest asthma rates in Boston."

Roxbury also has a high percentage of underrepresented minorities, whose increased presence in the sciences is part of the mission of the Teachers Institute. Almost 100 teachers from local schools have attended three-day mini-sabbaticals since the program began in 1994 with funding from the Howard Hughes Medical

Institute. The teachers return to school with a tool kit of ideas and equipment.

The Teachers Institute has become an important part of helping to keep Boston science teachers up-to-date in the fast-moving sciences, says science teacher John DioDato. "That's what's so special about what's going on between Boston and HMS now," DioDato says. "In five-year cycles, we run almost 100 percent of our science staff through the mini-sabbaticals. We see it as an opportunity to improve the pipeline of minority candidates."

Now, Cabrera says, after playing doctor in class—measuring blood pressure, temperature, and heart rate—her students are more interested in details when they visit their own doctors. A few want to become doctors, and one is considering a microbiology career. ■

Carol Cruzan Morton is a science writer for Focus.

GOING THROUGH THE MOTIONS

REACHING BEYOND THE SINGLE

snapshot of a protein frozen in a revealing position, structural biologists and colleagues at HMS are planning new ways to integrate images from a range of techniques to provide highly detailed and dynamic views of how atoms, small molecules, and large protein superstructures move, transfer information, and reconfigure in the crowded, fast-paced life of a cell.

This structural biology initiative is coming to fruition as the Center for Molecular and Cellular Dynamics, which builds on a critical mass of structural biology and closely related expertise on the Quod and at affiliated institutions. The center also reflects a trend in biology to find meaningful ways to integrate the growing "parts list" of genes, pro-

teins, and molecular structures to improve understanding of human health and disease and to display it in useful ways.

Leaders of the effort envision first developing methods for generating and analyzing "molecular movies" integrated in a model that can be viewed on a similar range of scales. Scientists want to be able to zoom in on commingling atoms and zoom out to membrane proteins, all in motion and over time, and eventually use the model as a research tool itself.

"Our intellectual goal is to figure out how cells work," says center director Stephen Harrison, Howard Hughes Medical Institute investigator and HMS professor of biological chemistry and molecular pharmacology. ■

—Carol Cruzan Morton

THE SCHOTT LETTER

The nation's most unique investment letter, written & edited by John Schott, M.D. HMS '66

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Forbes, February 1996

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BEST OF BOSTON RECIPIENT

Mocking the Docs

DROPSY, A STOUT MAN, COURTS Consumption, a coy but withered young woman. A fire-snorting beast chews on a foot afflicted with Gout, while tiny cavorting creatures offer tasty treats to a man with Indigestion. A group of surgeons—including Sir Dreary Dropsical, Doctor Peter Putrid, Samuel Sawbone, Frederick Fistula, Sir Jaundice Jollop, and Launcelot Slashmuscle—serenely saw away at the leg of an agitated man.

These images are all examples of graphic satire, which enjoyed great popularity, especially in Britain, in the late eighteenth and early nineteenth centuries. This was the time of the Enlightenment and the Industrial Revolution. Rapid and significant changes in politics, economics, social structure, religious values, and scientific knowledge were creating anxiety among the public. As they rose in status, the emerging managerial

and professional classes—including politicians, barristers, academics, scientists, and physicians—became targets of both public resentment and the satirists' wicked wit.

Caricaturists of that era often used ailments—such as consumption, gout, indigestion, and depression—as metaphors for greater social and political ills. Few subjects, in fact, proved more tempting to the satirists than doctors and disease. The satirists' zest for lampooning medicine arose in part from expectations generated by the rapid and significant transformation of medical knowledge that accompanied the broader changes of the era.



THE DEVIL IS IN THE ENTRAELS: George Cruikshank depicted "The Cholic" as a maiden lady alarmed by the frenetic demons tugging at her abdomen.

The eighteenth century saw ancient models of classical humoral pathology beginning to crumble in the face of modern theories based upon the scientific method. But the growing body of medical knowledge would not produce effective treatments for many years. Bleeding, purging, and other "heroic" measures—remnants of earlier medical practice—would persist well into the nineteenth century. The bitter reality that medicine's new knowledge had yet to yield significant improvement in the treatment of disease and suffering made physicians ripe targets for comparison to other powerful but not always effective members of society, such as politicians.

The Rare Books and Special Collections Department of the Francis A. Countway Library of Medicine, which houses approximately 300 of these lively and gleeful prints, recently mounted an online exhibit that features the highlights of this collection. Artists include such prominent caricaturists as William Hogarth, Thomas Rowlandson, George Cruikshank, and James Gillray. To admire the satirists' handiwork, visit <http://countweb.med.harvard.edu/rarebooks/satires>. ■



WELL-TURNED CALVES: Edward Jenner's use of cowpox to vaccinate against smallpox provoked the ridicule of satirist James Gillray, who merrily portrayed Jenner's human subjects turning into cows upon inoculation. But this time the artist's skepticism was misplaced; Jenner's discovery was one of the first truly effective treatments developed by emerging scientific medicine.

PRESIDENT'S REPORT



JUST NORTH OF VANDERBILT HALL stands a new structure now known as the NRB, the New Research Building, but surely awaiting a more distinctive name once a generous donor is found. It is adjacent to another recent structure, the Harvard Institutes of Medicine, or HIM, which arose from the foundation of what was Boston English High School.

HIM broke new ground by housing scientists from HMS and several of the affiliated hospitals, reflecting the intellectual cooperation that crops up not infrequently and happily ignoring the competitiveness that can surface in the clinical arena. The NRB will add more than 400,000 square feet of research facilities, to be shared among the Longwood family members. It will also bless the faculty with a large auditorium and a long-needed conference center.

The NRB is not the only addition to research space in these parts. Children's Hospital is adding 300,000 square feet. And it appears that the minuscule Judge Baker structure has been sold to a developer whose currently known plans envision a research building of up to 400,000 square feet. Add to that some 466,000 square feet that Merck is putting up on the Emmanuel College campus, plus a major addition across town by Massachusetts General Hospital, and one begins to wonder whether Boston's "Big Dig" will accommodate the traffic added by this enthusiastic burgeoning of research capacity alone. And there are mutterings implying even more!

The rub, of course, is whether we can fill all that space. Yes, with people—after all, nature abhors a vacuum—and excellent people at that, but can we generate the dollars to handle the costs? The doubling of the National Institutes of Health budget, announced several years ago, is drawing to a close, but even if the future had been meant to be a straight-line extension of the past, the future is not what it used to be, given the economic situations of governments federal and local, the tempered return on endow-

ment, tensions abroad, and restiveness at home. Even in good times research grants tend not to pay the full costs of a vigorous research establishment, and those prayed-for exceptional income streams—the big scores in technology transfer that generate major commercial royalties—are few and far between.

Another potential challenge may arise from the growing proximity of pharmaceutical and biotech firms. Leaving aside any useful scientific dialogue, they may promise mouthwatering discrepancies in salaries for researchers from principal investigators to bottle washers. And despite the valid caution that he who rides the tiger cannot dismount, the inability to resist blandishments from such firms can generate major disruptions in the progress of scholarship in academia.

So, the clinicians among us HMS alumni across the nation feel pushed about by forces beyond our control, and comparable disquiet may well be mounting in our campus research community. How we deal with these forces will likely be critical in shaping the nature of the School over the next few decades. Would that we could address the interaction with our environment with as much facility as we are moving into molecular biology, and respond as rationally.

By the way, if you haven't shared your email address with us, we'd love to have it—not to add to the spam you now receive, but rather to foster timeliness and thrift in the communications we offer you and to cultivate virtue in our responsiveness to requests and questions you might toss our way. Please send your email address to nora_nercessian@hms.harvard.edu.

And if you haven't checked out our HMS alumni website, don't miss the opportunity to stay tuned. It's www.hms.harvard.edu/alumni. ■

Mitchell T. Rabkin '55 is an Institute Scholar at the Carl J. Shapiro Institute for Education and Research at HMS and the Beth Israel Deaconess Medical Center, as well as chief executive officer emeritus of Beth Israel Hospital and CareGroup.



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An Arrow Through the Heart

One Woman's Story of Life, Love, and Surviving a Near Fatal Heart Attack
by Deborah Daw Heffernan (Free Press, 2002)

LIFE BEGAN—AND NEARLY ENDED—ONE DAY IN MAY 1997 for the author of *An Arrow Through the Heart*. Deborah Daw Heffernan was 44 years old, a partner in a corporate training company, ecstatically married, with a regular mat at the yoga studio and not one cigarette to her name. Then, in the middle of an advanced stretching class (“a warming pose”), she had a massive and idiopathic LAD artery dissection.

The young, nutritionally careful, cardiovascularly fit, and premenopausal author almost died, but instead survived to write about what she describes as her “year’s stay in the monastery of illness.” This is not an educational book in any traditional way (for instance, there is no appendix of anginal symptoms specific to women, even though Heffernan notes that more women than men die of cardiac disease, and more women die of cardiac disease than all other causes combined). It is instead the unabashedly passionate book that her life has been waiting for her to write.

“Disease,” she begins in the prologue, in a lively, often light way, “becomes a diagnostic tool for the spirit.” The facts follow. After unsuccessful emergency angioplasty at Mount Auburn Hospital, she is taken to Massachusetts General Hospital, where she receives a double bypass in the middle of the night. She is left with permanent cardiomyopathy, residual ventricular tachycardia requiring AICD (automatic implantable cardiac defibrillator) placement, an ejection fraction of 25 percent, and a ticket for transplant.

It takes Heffernan more than 100 pages to cover just four weeks of surgical recovery before leaving MGH. There is ICU psychosis (a term actually coined there, I believe) and dawning consciousness of her condition. There is dependence so absolute that her bowels are grateful when a nurse “swoops a bedpan beneath me with the flourish of a waiter pulling out a chair”; she is “reduced to being thrilled with a sponge bath.” There is the evidence itself: a scar like “a mountain ridge” rising from stomach to clavicle. There are sequential accomplishments: first meal, first pee, first walk.

The book is a diary, but just as importantly, a love story. Heffernan is in love many times over—foremost with her husband and family, but also, and equally intensely, with a

number of HMS alumni. Since complaints are the most common form of communication between patient and doctor these days, unblushing adoration must feel very, very good to receive. It certainly feels good to read. “I am always giddy with the doctors who saved me,” she writes, “a medical groupie.”

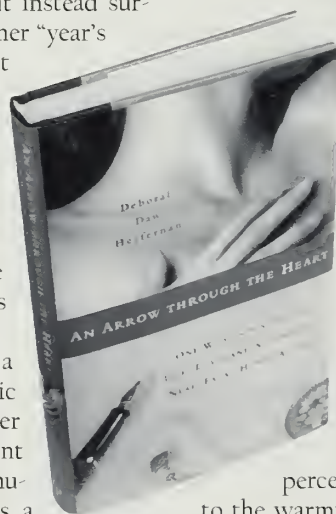
HMS is no slouch when it comes to its alumni. In medical journals and press releases, their accomplishments are described admiringly and sometimes reverentially. But never have they been described so downright tenderly. Cardiologist Marc Semigran ’83 has “the dimpled rosy cheeks of a shepherd boy in a Renaissance painting” (find that anywhere else in his résumé). Cardiac surgeon David Torchiana ’81 is “my torch of light.” Psychiatrist Ned Cassem ’66 “glow(s) from within like an apricot.” Each specialist inflames her: “When they are near, I am an exploding piñata. Candy and messy emotions are everywhere.”

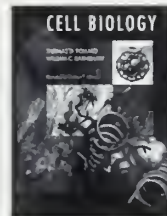
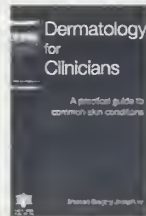
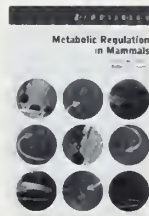
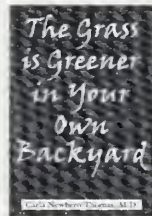
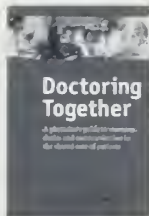
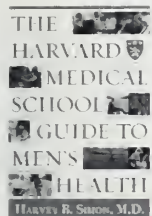
When Heffernan and her husband leave the loving arms of MGH (a new identity for that aristocratic place), she cannot pull, push, shove, lift, or hang laundry. They relocate to their summer home in Maine, where she is “a bag of bones embarking on...adventure.” The months on those high seas of recovery include making peace with AICD (“now my enemy and best friend”) and its constant potential to deliver the shock of her life, consulting osteopaths and massage therapists, studying the Tibetan Book of the Dead, potting plants with 25 percent of previous aerobic capacity, and a return to the warming poses of yoga. There is spiritual realignment, as one might expect, and other genuine augmentations to being a traditional medicine groupie (except for herbs—even peppermint tea is forbidden).

Reading about catastrophe is always a dilemma: how can you enjoy a book about someone’s physical suffering? But here you follow the example of Heffernan, who enjoys herself in odd, articulate, and hard-won ways. The Dalai Lama is rumored to giggle a lot, and you get the idea that this author wouldn’t hold anyone’s guffaw against them. Sublime humor, that high defense, is on the list of treatments she has picked.

The book ends with six pages of single-spaced acknowledgments and one tender example: “I thank all of you from the bottom of my half-a-heart. Please eat your vegetables and walk vigorously for 30 minutes every day, reducing your chances of getting heart disease by 40 percent.” No punchline could be sweeter. ■

Elissa Ely ’88 is a lecturer on psychiatry at HMS.





The Harvard Medical School Guide to Men's Health

by Harvey B. Simon '67 (*The Free Press*, 2002)

This comprehensive manual, based on results from HMS and Harvard School of Public Health studies of more than 96,000 men followed for up to 25 years, aims to help men overcome the disparity between male and female longevity. The author reviews the health needs of men and discusses risk factors and preventive measures related to the three leading causes of death in American men—coronary artery disease, stroke, and cancer. He also examines male-specific diseases and offers a program to help men stay healthy.

Doctoring Together

A Physician's Guide to Manners, Duties, and Communication in the Shared Care of Patients by John D. Stoeckle '47, Laurence J. Ronan '87, Linda Emanuel '84, Carol Ehrlich, and Cynthia Cardon Hughes (*Massachusetts General Hospital*, 2002)

The authors, colleagues in the Primary Care Program at Massachusetts General Hospital, offer guidelines for communicating effectively and building strong professional relationships. They explore doctor/doctor interactions, as well as relationships between doctors and residents, students, and nurses. They stress the importance of showing interest in the work of other physicians, mentoring physicians-in-training, and sharing the care of a patient with colleagues.

The Grass Is Greener in Your Own Backyard

by Carla Newbern Thomas '82 (*Dorrance Publishing Co.*, 2002)

Thomas presents a compilation of religious-themed poems and songs, as well as short stories based on her medical experience. Reflecting her background in working with adolescents, her writing deals with the dangers young people face. It reaches out to them, urging them to make the right choices in their lives.

Metabolic Regulation in Mammals

by David M. Gibson '48 and Robert A. Harris (*Taylor & Francis*, 2002)

In a concise companion text for life science students, the authors provide an introductory overview of the control mechanisms that regulate metabolic flows in mammalian cells and tissues. They follow this introduction with four chapters focusing on individual tissues and the interplay among tissues: red blood cells, muscle, adipose, and liver.

Dermatology for Clinicians

A Practical Guide to Common Skin Conditions, by Massad G. Joseph '77 (*Parthenon Publishing Group*, 2002)

A reference guide for primary care physicians whose patients present with skin problems, this book outlines common dermatological conditions—

including psoriasis, herpes, acne, scars, fungal infections, and skin cancers—and provides step-by-step, detailed instructions for diagnosis and treatment. The author offers both basic and advanced approaches to managing common skin problems.

Cell Biology

by Thomas D. Pollard '68 and William C. Earnshaw (*W.B. Saunders Co.*, 2002)

This undergraduate textbook, which is also appropriate for graduate and medical students, presents the latest developments in the field of cell biology, emphasizing macromolecular interactions and their relation to cellular structure and function. The book features color illustrations and includes clinical examples that depict how cell biology explains human disease.

Change Your Looks, Change Your Life

Quick Fixes and Cosmetic Surgery Solutions for Looking Younger, Feeling Healthier, and Living Better, by Michelle Copeland '77 (*HarperResource*, 2002)

This guide to cosmetic procedures covers surgical options, including facelifts, liposuction, and breast augmentation and reduction, as well as nonsurgical choices, such as laser treatments and botox injections. The author, a plastic surgeon, explains each available procedure and discusses preparing for and recovering from surgery. She also includes a chapter for men considering plastic surgery.



Don't Change Your Tune: New Surgical Techniques Spare the Voice



niques. Much of the past decade of these innovations is detailed in two papers in the December issue of *Annals of Otolaryngology, Rhinology & Laryngology*, which look at two groups of patients: those with early vocal cord cancer and singers and orators who develop lesions on the vocal folds.

Speak Easy

Surgery of the larynx lends itself to minimally invasive techniques. Over the past 25 years or so, endoscopic surgery has replaced open surgery in a large number of laryngeal cancer cases. The surgeon views the vocal cords through a microscope and removes cancerous tissue with specially elongated instruments and sometimes a carbon dioxide laser as well.

Even with improvements in instrumentation, surgery generally has been viewed as less desirable than radiation in the treatment of early vocal cord cancer. Both have high cure rates, but radiation is thought to result in less damage to vocal cords. Zeitels and his colleagues have spent the past decade evaluating this issue and boosting the role of surgery by exploring techniques to perfect more precise resections, remove smaller amounts of tissue, and reconstruct tissue when needed. "In fact, some studies have demonstrated that over time, radiation can cause fibrosis and stiffness of normal vocal fold tissue," Zeitels says. "The goal is to preserve the normal tissue since this is the primary voice source. So radiation treatment for early cancer is conceptually flawed because it targets both the normal and cancerous vocal cords indiscriminately."

Zeitels believes the poor voice outcomes of surgery are not necessary in many cases. "What we learned about cancer patients in the early '90s is that their management was frequently not

done with the optimum amount of precision," he says. "Often the approach consisted of overtreatment." Part of the uncertainty lay in not knowing the depth of the tumor in the tissue. Cancer excisions confined to the superficial layers of the folds were much less damaging to the voice than those including the underlying muscle and vocal ligament, which may compromise the ability of the folds to close. Zeitels developed the technique of infusion, in which liquid is injected into the subepithelial tissue; if the tumor rises, it has not yet invaded the ligament and musculature. He found that many early cancers were shallow and required less tissue removal.

The latest study gathered vocal outcome data for a group of 32 patients undergoing phonosurgery for early cancer of the vocal cords. Infusion showed that nearly half needed only superficial resections. Of the others, nine required reconstruction, which involved lipoinjection or a Gore-Tex implant to fill out the folds. All of the patients are free of cancer without radiation or open surgery, and most achieved conversationally normal voices after the surgery.

Occupational Hazards

Singers and vocal performers put a stress on their vocal cords akin to the physical exertion of a marathon runner. With their vocal folds vibrating at full volume for long periods of time, singers and orators often develop bumps, polyps, and rough surfaces on the tissues. These lesions can damage the voice that for many is also a livelihood. Although surgical removal is possible, there is a chance that any excision will permanently alter the voice. Zeitels set out to study this patient population more systematically. Until his recent study, there was little data to determine the success of surgical management in vocalists.

Using an approach called stroboscopy, the surgeon can assess the vibratory function of the vocal cords. A strobe light cre-

IT IS HARD TO BELIEVE THAT THE source of the purest, sweetest singing voice is two small folds of tissue drubbing together at high speed in the middle of the throat, and that even the most delicate aria is born of pressure and force. The vocal cords move together and apart in a wave, from bottom to top. Repeat this contact 100 to 1,000 times a second and you have a voice that can produce exquisitely varied sounds. But too much strain can leave flaws in this delicate system, and when bumps, cysts, or cancers arise in the vocal cords, a patient's voice is at stake.

Innovations in vocal cord surgery have helped improve the odds of eliminating these problems without sacrificing the voice. Steven Zeitels, HMS associate professor of otology and laryngology and director of the Division of Laryngology at the Massachusetts Eye and Ear Infirmary, has been a leader in developing increasingly precise phonosurgical tech-

ates the illusion of slowing down the rapidly vibrating cords and allows the observer to watch them move together and apart. Voice outcomes of the surgeries in both studies were evaluated by Robert Hillman, HMS associate professor of otology and laryngology and a voice scientist who leads the voice lab at the Massachusetts Eye and Ear Infirmary. Hillman's group primarily tested two general metrics of the voice: acoustic measures such as loudness, pitch, and regularity of tone, and aerodynamic measures—how much air the person must push from the lungs to get the vocal cords to vibrate.

In the cancer patient group, many of the measures taken before surgery were abnormal but showed significant improvement after the procedure and some voice therapy. For the group of 185 singers and performers, Hillman says, the voice measurements were trickier. The metrics of normal and abnormal ranges are designed for the general population, not the exacting standards of a performer. "It's not surprising that the measures we used to

indicate a range of normal limits may not be as sensitive in this group," he says. The team did find, however, that the few abnormal measures improved after surgery, and eight of the 24 objective measures showed statistical improvements across the group. The surgery did not cause any measures to drop below the normal range, and nearly all the patients thought their voices had improved. The study helps bring data to a patient population that often approaches treatment with trepidation, unsure if treatment outcomes are worth the risk of worsening the voice.

Zeitels believes that the two studies, though very different in type of patient, represent a convergence of surgical approaches. His team found that "when we managed the cancer patient with the precision that you manage the performer, we could enhance the voice outcome without sacrificing oncologic efficacy."

Singers, like athletes, offer a model for studying how different behaviors affect the vocal cords: a musical-theater singer who belts out Broadway numbers is cre-

ating a different kind of stress than an opera singer. "If you can understand how these individuals function, you can master restoring most other voices," Zeitels says. He has found that singers can often perform with long-term trauma because their activity has induced more elastic normal tissue to compensate—their vocal cords even appear larger. The team has a partnership with Robert Langer, an HMS senior lecturer on surgery at Children's Hospital and the Kenneth J. Gerneshauser Professor of Chemical and Biomedical Engineering at MIT, to develop biomaterials that could be used to reconstruct this elastic tissue.

The trick, Zeitels says, is to find a material that does not degrade and is pliable, since stiffness is the cause of the majority of hoarseness. He believes that maintaining or even supplementing the healthy tissue may become just as important in vocal surgery as removing the abnormalities. ■

Courtney Humphries is a science writer for Focus.

LIVING LARGE TAKES A BITE OUT OF LIVING LONG

Severe caloric restriction is known to promote longevity in laboratory animals, but researchers have wondered whether a drastic cutback in food is really necessary for long life. Food-deprived rodents exhibit a host of characteristics, such as low body fat, and alterations in the activity of proteins, such as insulin. If body fat and insulin activity could be reduced by some other means, might animals live longer while eating all they liked? The answer, it appears, is an appetizing yes.

Matthias Blüher, Barbara Kahn, and C. Ronald Kahn followed the fates of mice lacking the gene for a protein involved in insulin activity, the fat-specific insulin receptor. The mutants exhibited a 50 to 70 percent reduction in body mass throughout their lives. And they were considerably longer lived. For example, 80 percent of the knockouts were alive at 30 months, compared to 50 percent of controls. Many mutants lived well beyond that point. In their study in the January 24 issue of *Science*, the scientists report that the knockouts' mean lifespan increased by 3.5 months.

Most significant, the mutants achieved all this without dieting. In fact, the knockout mice ate significantly more than their wild-type littermates. "Leanness, not food restriction, is a key contributor to extended lifespan," write Blüher, an HMS research fellow in medicine, and C. Ronald Kahn, the Mary K. Iacocca Professor of Medicine, both at Joslin Diabetes Center, and Barbara Kahn, an HMS professor of medicine at Beth Israel Deaconess Medical Center.

How, exactly, leanness promotes longevity is not clear. One possibility is that reduction in body fat lowers production of oxygen free radicals associated with aging. Another possibility is that alterations in insulin signaling are responsible for the gain in longevity. Mutations that reduce insulin-like signaling in worms and flies have been shown to increase life expectancy. "The exact mechanism underlying this effect requires further analysis," write the authors. ■

—Misio Loundou

The *art* OF TOUCH IN HEALING



COVER STORY

IN 1816, RENÉ LAENNEC, AN EXPERT IN CHEST DISEASES, WAS examining a plump young woman with heart problems. Painfully shy, the doctor could not bring himself to press his ear to her chest, the only known method of auscultation. Remembering a childhood trick of scratching the end of a log with a pin to amplify a sound, he rolled sheets of paper into a cylinder. When he applied one end of it to the woman's chest and the other to his ear, he was surprised to find that he could hear her heartbeat clearly. He went on to invent the monaural stethoscope.

"Before Laennec's discovery, touch had been unquestioned in the doctor's interaction with the patient," says Lucy Candib '72. "When stethoscopes first came into use, many doctors were even offended by the idea of inserting something mechanical between themselves and their patients. Since then, however, medicine has become increasingly ambivalent about touch. Based on customer input, Littmann recently lengthened the tubing of its stethoscopes because of practitioners' 'desire to distance themselves from sick patients, as well as ergonomics.'" Today medicine is asking new questions about an ancient practice: how is technology shaping clinical touch, and what aspects of clinical touch should resist change?



GETTING AN EARFUL:
Tradition has it that
René Laennec pioneered
a new direction in med-
ical care when, too shy
to press his ear to the
chest of a well-endowed
female patient, he
invented the monaural
stethoscope, depicted in
this engraving of the
young doctor.

MOTHER NURTURE:
Researchers have shown that early nurturing touch is essential to the normal development of humans and other primates. Here, a baby monkey takes comfort from a terry-cloth mother which, researcher Harry Harlow found, provided more benefits than mere wire-frame mothers.



From neurobiology to surgery to family
medicine, science is transforming
applications of touch *by* BEVERLY BALLARO

IN DIFFERENT STROKES IN

AN ERA WHEN SPACE-AGE technologies are transforming the role of touch in healing, Mary Carlson, associate professor of psychiatry at HMS, has turned to some of science's most sophisticated tools to demonstrate the primacy of a decidedly low-tech factor in human development: the nurturing touch essential to every child's capacity for physical and mental health.

Carlson's career long fascination with the role of touch reaches back to the late 1950s and her freshman year at the University of Wisconsin when she took an introductory psychology course with Harry Harlow. Carlson, who had assumed that infants of all species were genetically programmed to progress to normal adulthood, was amazed by the results of Harlow's famous experiments with monkeys.

"Harlow's research clearly showed that if a baby didn't get maternal affection, it didn't

become what we normally think of as a monkey," Carlson says. "Even if baby monkeys could see, smell, and hear other monkeys—but not touch them—they still turned into bizarre, pathetic creatures."

Carlson spent much of the next two decades of her career trying to figure out why and how a lack of maternal touch could lead to such devastating—and permanent—damage. "It seemed an intuitive and logical idea that early sensory stimulation affected the nervous system

Despite the diet, medical care, and sanitary conditions, great numbers of children consigned to state care displayed stunted growth and grossly delayed speech and motor skills.

and, specifically, the development of the brain pathways and organization. Consequently, a lack of touch would lead to abnormal pathways. So I spent many years studying the areas of the cerebral cortex that mediated touch to see how they might be disordered as a result of different levels of maternal touch."

Carlson created highly intricate, detailed maps of the brain in her quest to sort out the links between primary sensory pathways, early deprivation, and behavior. Taking a cue from other researchers' experiments—in which they covered one eye of a newborn primate and subsequently learned that doing so would cause the brain to develop compensatory pathways—Carlson tried analogous experiments in the early 1990s in which she outfitted one hand of a baby monkey with a glove. To her surprise, unlike in the case of partial visual deprivation, in cases of partial tactile deprivation, a monkey's brain organization appeared normal when the glove was removed. This pointed to some mechanism at work other than the sensory pathways that had long been the focus of Carlson's investigation.

"My first question was: if it's not the sensory pathways, then what is it?" Carlson says. "My second question was: what am I doing in a lab with monkeys?" Apart from the stresses of studying the role of touch in primate development at a time when some animal rights activists were beginning to target neuroscience researchers—some of her colleagues and their children received death threats—the political, as well as medical, implications of touch research were becoming more starkly apparent to Carlson. "I wasn't interested in making it my life cause to support ethically conducted animal research," she says. "I wanted to focus

on issues affecting the quality of life for children. I began to see connections between what we were learning in the laboratory about touch and the lives of children in the real world."

Those connections began to take shape in Carlson's mind partly as a result of work done by researchers who had begun to identify the crucial role of touch in establishing the regulatory functions of stress hormones. Their research showed that if newborn rats did not receive touch stimulation during an early, critical window, they would suffer impairment of the hypothalamic-pituitary-adrenal axis, the body's major endocrine stress pathway. This would lead to lifelong oversecretion of the stress hormone cortisol in response to daily life challenges.

Because cortisol works to dampen the physiological consequences of stress by suppressing the body's energy-expensive systems for growth, digestion, and immunity, an overabundance of the hormone could have adverse effects on normal development. The homeostatic mechanisms of deprived animals would tend to get stuck in overdrive, and their inability to manage their stress efficiently would lead them to exhibit both brain and behavioral deficits.

"I began to wonder: have I been looking in the wrong place all these years?" says Carlson. "Maybe the HPA axis is the key. Maybe it's the adrenal cortex—and not the cerebral cortex—that holds the answer as to why an early lack of touch can have such devastating consequences for the developing young."

The Surreal World


Carlson found an opportunity to translate this new understanding of the importance of touch in dramatic and

practical fashion when the 1989 collapse of Nicolae Ceausescu's authoritarian Communist regime in Romania permitted outsiders their first extended look inside a nation that had been largely sealed off from the world for decades. In his maniacal zeal to transform Romania into an industrial power, Ceausescu had imposed draconian measures for the purpose of coercing the largest possible future work force out of the country's population.

Children whose overburdened parents could not care for them became the property of the state. Before long, not just poverty but any perceived anomaly could land a child in a residential institution, called a *leagane*, or "cradle." Such institutions, according to the regime's propaganda, represented a fine, even humane, alternative—a view widely shared by mothers and pediatricians attempting to cope with the stress and guilt that stemmed from separating children from their parents.

"In many ways," says Carlson, "what was taking place was rationalization and denial on a massive scale. Mothers would console themselves by insisting, 'I'll come back and visit.' Doctors would take pride in the medical approach to the institutional care provided to the children; there was an enormous emphasis placed on hygiene, nutrition, antiseptics, and antibiotics. The popular perception of state institutions as places where kids received food and medicine not necessarily available to other people in a country as desperately poor as Romania even led to widespread resentment of institutionalized children—not unlike the ways in which some in our own society disparage welfare recipients."

Despite the diet, medical care, and sanitary conditions—better than ade-



WHEN NO HAND ROCKS THE CRADLE: An absence of early nurturing touch has led to lifelong consequences for thousands of children raised in Romanian orphanages.

quate by Romanian standards—great numbers of children consigned to state care displayed stunted growth, grossly delayed speech and motor skills, and other evidence of a failure to thrive. The harried caregivers—overwhelmed by a typical load of 12 to 20 children per adult—could act as little more than custodians and were not in a position to question institutional practices. The staffs did not include any nurses, psychologists, or social workers, as Ceausescu had eliminated these professions in his contempt for “soft” disciplines and his desire to channel all resources into the hard sciences that would benefit heavy industry.

The only people who might have made an issue out of so many children failing to meet so many developmental milestones were the pediatricians. But many pediatricians, says Carlson, also rationalized away the phenomenon by operating on the assumption that the anomalies that had led some children to institutional care in the first place—

and not the conditions of that care—accounted for the children’s problematic development.

It fell to pediatricians to make judgments on the children, once they had reached the age of three, as to whether they should be classified as “irretrievable” or “educable.” The “irretrievables” would be warehoused in other state institutions until their 18th birthday, at which point they would be dumped into society to fend for themselves. Many, it was whispered, found their way into the ranks of the *Securitate*, the feared Romanian secret police; their stunted emotional development and attendant lack of ability to form social attachments made them uniquely suited, some suspected, to the brutal nature of the job.

Not long after Ceausescu and his wife—hurriedly tried and convicted by a military tribunal—were executed by a firing squad on Christmas Day of 1989, life inside Romania’s orphanages became subject, for the first time, to outside scrutiny. Among those trans-

fixed by the disturbing images that began to emerge—of silent, swaying children staring vacantly into space—was Mary Carlson: “When I saw those scenes out of the orphanages, something clicked. I realized that the affects and behaviors of those children bore a striking resemblance to those of the autistic-like monkeys who had been deprived of maternal touch and nurturing early on.”

Spitting Images

Carlson recognized that Romania represented a real-world opportunity to put to the test what she had been studying for years in the laboratory, in a way that might have beneficial social and political implications for children. She secured grant money from the Milton Fund to recruit a team of colleagues to join her in working with institutionalized toddlers, who had originally been placed in *leagane* care between the ages of two and nine months, in the town of

Iasi, Romania. Carlson worked with children in an existing two year study that had randomly assigned some children to an enriched caregiving situation (one highly physically and verbally interactive caretaker for every four children) and compared them to a control group, in the same institution, receiving standard institutional care (a single harried caregiver for every 12 to 20 children). Team members measured cortisol levels by collecting samples of the children's saliva to understand their daily patterns and to test their responses to the stress of social events.

The readings confirmed that the cortisol levels in the control group reflected hormonal profiles typically seen in people suffering from depression or post-traumatic stress disorder. When the

children were subjected to a stressful event—a physical exam conducted by a physician unknown to them—their stress levels not only rose to extreme heights, but also took a long time to recover. Children with the greatest abnormalities in such hormonal readings also scored lowest in tests designed to measure motor and mental development.

On the basis of what they learned in Iasi, Carlson and her colleagues were gradually able to nudge orphanages into adopting reforms. “We convinced the doctors by appealing to them in scientific terms they could accept; when we showed them the cortisol results, that was real to them, so they were more inclined to take action.” Among the changes instituted: newborns were no longer so tightly cocooned that they

lay immobile in their cribs for hours on end, their only human interactions taking place when their caregivers would change their diapers or prop bottles of formula next to them at feeding times.

The encouragement of greater physical interaction and stimulation presented a major breakthrough considering the scene Carlson had typically encountered when walking into a Romanian orphanage nursery before reforms were instituted. The room would be filled with 20 babies all younger than six months, but devoid of any sounds of crying. The babies would lie uncannily still and withdrawn in their cribs, staring vacantly into space. “They had simply given up,” Carlson says.

Given the crucial nature of nurturing touch in a child's development and the



GETTING READY FOR PRIME TIME: Paul Neumann, a research assistant at the Virtual Reality in Medicine Laboratory at the University of Illinois at Chicago, works on a computer program he developed that allows surgeons-in-training to practice retinal surgery with actual medical instruments before performing the procedure on patients.

brevity of the window for delivering that stimulation to a child, Carlson believes that the solution lies not in improving institutions, but in replacing them with community-based alternatives.

"It is an ongoing tragedy for countless children the world over," says Carlson, "made all the more heartbreaking when you think about the enormous potential that exists at birth. Humans in utero produce twice as many neurons as survive by the time a child is born. This overabundance—exuberance, as neuroscientists call it—is just as remarkable as the brain's plasticity. The brain has the capacity to compensate for an amazing amount of damage and to recover function. That's the good news. The sad news is that this capacity comes at the price of an exquisite

sensitivity early in life; the early capacity is matched by an early vulnerability, and prolonged early deprivation can slam the window shut for good."

What makes the situation even sadder, Carlson says, is that while we as a society know how to provide remedial therapy for lagging cognitive skills, medicine still does not understand how to make up for lost early socialization opportunities. Even if we are eventually able to devise methods to achieve some rehabilitation of early social deprivation's devastating effects, she argues, the human and financial costs of delivering such services would be so enormous that it would be foolish not to invest resources in prevention.

Such choices, Carlson says, have already come to the fore globally. While

Romania has phased out many of its orphanages, a crisis looms in sub-Saharan Africa, where AIDS has already orphaned millions of children. The question, Carlson says, is whether this disaster will be compounded by herding these children into institutions.

"Strengthening communities to help socialize orphans can prevent potentially millions of children from early deprivation in the first place," Carlson says. It is toward this end that she and her husband and colleague, Felton Earls, have launched a major community-based study on children's mental health in East Africa. "Such prevention," Carlson says, "is clearly a more pragmatic and far more humane strategy than attempting to undo the damage once it has already been suffered." ■

A new generation of computer-assisted tools is changing the way surgeons touch their patients

VIRTUALLY POSSIBLE

A TRAUMA SURGEON HAS BEEN CONSULTED on the case of a soldier wounded on another continent. The on-site examining clinician slips on a customized virtual-reality glove that collects data on what she is feeling through sensors located in the glove's fingertips. This information is stored and then transmitted to the faraway surgeon, who can experience the exam in tactile fashion and in real time, as if he were conducting the exam himself.

here's no better presurgical training than playing Nintendo from the age of two on, and that's pretty much the norm for today's entering students."

An internist prepares to conduct a breast exam on a patient. Using a computerized, electromechanical palpation device, she performs a gentle, non-invasive exam. The precise, objective breast density map that emerges becomes a storable medical record. By comparing these data against the results of future exams, the doctor can map and monitor any breast changes that occur over time.

A medical student needs to learn how to perform an intubation. Instead of practicing the procedure on a mannequin and then switching to real patients under close supervision, he practices on a virtual reality simulator. Through a haptic interface, the simulator provides him with a realistic tactile sensation of the procedure.

Although these scenarios may read to the lay public, and perhaps even to some physicians, like fantasies straight out of a "Star Trek" episode, they are either already realities or promise to become so in the near future. Medicine's embrace of the technologies made possible by the Information Revolution is rapidly transforming what is one of the most basic and ancient tools of doctoring—the sense of touch.

One of the pioneers helping to speed that transformation is Anthony DiGioia III '86, an orthopedic surgeon and co-director of the Center for Medical Robotics and Computer Assisted Surgery in The Robotics Institute of Carnegie Mellon University and the Western Pennsylvania Hospital. Although the field of computer-assisted surgery may be young, it promises to eclipse current approaches to the ways patients are diagnosed, undergo surgery, and are monitored in recovery. "Whereas current surgical practice is a relatively loosely connected and sometimes uncoupled sequence of events,"

DiGioia says, "the next generation of surgical tools and technologies will include preoperative planners and simulators based on three-dimensional modeling of a patient's anatomy and physiology, thus making possible patient-specific plans. In fact, the use of computer-assisted technologies will influence every phase of patient care."

The Surgical Toolbox of the Future

To bring about this revolution, doctors will rely on enhanced versions of existing equipment as well as newly invented technologies to stock what DiGioia refers to as "the surgical toolbox of the future." This toolbox, he predicts, will include robotic-assisted devices capable of precision cutting and positioning, navigational and image-guided tools that provide real-time information to surgeons, micromanipulators, and implantable sensors. "Smart" tools will optimize presurgical planning and the use of simulators to test surgical plans. Just as fiber-optic technology has made possible every type of scope in use in medicine today, this new family of computer-assisted tools, DiGioia says, is being driven by today's information technologies.

Perhaps even more than computer-assisted tools, it is the surgical information systems and "computer vision" of augmented reality (sometimes called hybrid reality) that promises to profoundly alter the role of touch in the surgical profession. Augmented reality combines the real world with the virtual world to display digital images in the surgeon's field of vision. During an operation, for example, the surgeon would be able to "see" bones and tissues that normally would be obscured from view. This "x-ray vision without

the use of radiation," as DiGioia describes it, gives surgeons the ability to use their hands to manipulate instruments and parts of anatomy in ways that would not be possible using conventional means.

Adding to these advantages are image-guided navigation tools. DiGioia likens the technology behind these instruments to that employed by the global positioning systems built into planes and ships. Just as vehicles so outfitted still require a captain at the controls, so, too, do these navigation tools require hands-on manipulation by surgeons. These tools complement but do not replace the surgeon's skills. Their advantage is that they allow surgeons to act on real-time information when they need it most—during surgery.

While the shift to new techniques remains controversial in some quarters, the improved outcomes stemming from minimally invasive procedures are well documented and sometimes dramatic. "Take an operation like the removal of a gallbladder, for example," DiGioia says. "Years ago, that was an open procedure that kept a patient in the hospital for a week and out of work for an extended convalescence. Today, that is no longer the case. We are already seeing similar kinds of transitions at work in orthopedic and cardiovascular surgery as well as neurosurgery, and we're going to be seeing more and more of this trend in many other medical and surgical specialties."

Nintendo Surgeons

The new touch technology has proven remarkably intuitive to the current generation of medical students. "Young doctors are not only comfortable with using computers to transform their sense of

touch and add to their ability to use information, but they also expect to be able to do so," says DiGioia. In some ways, he jokes, "there's no better presurgical training than playing Nintendo from the age of two on, and that's pretty much the norm for today's entering students."

Training and learning, DiGioia points out, are already being transformed. "Students, residents, and fellows can work in real time and get instantaneous feedback," he says. "Increasingly, they will be able to learn not just on cadavers but also on computerized substitutes, much the way pilots train on flight simulators." In some areas, this is already the case. With arthroscopic simulators that replicate the human knee, for example, he says, "If you grab a probe and push, the tissue pushes back."

But, DiGioia quickly adds, the strengths that young "Nintendo surgeons" bring to the operating room are the same talents displayed by their more seasoned mentors. "The new technology diminishes neither the technical challenges of surgery nor the talents required to perform it well," he says. "Hand and eye coordination, the ability to react efficiently and properly, the dexterity to be able to work in small spaces—these are timeless attributes relevant to both the conventional and computer-assisted ways of performing surgery."

Like most new trends, this one has encountered its share of resistance, which DiGioia welcomes as "a sign of the healthy skepticism with which all good scientists operate." DiGioia has found that the biggest hurdle is overcoming many of the misconceptions associated with new concepts like robotics, computer-assisted technology, and navigation. "For the last several years, we have been actively teaching



GUT INSTINCTS

NOT TOO LONG AGO, THE CONCEPT OF USING VIRTUAL REALITY TO AID physician learning seemed to belong to the remote future, if not the realm of fantasy. Clinicians learned their craft the old-fashioned way—through one-on-one apprenticeships, demonstrations by experts, textbook diagrams and instructions, and makeshift substitutes for human organs and tissues.

"When learning, for example, how to perform surgery or endoscopy on an upper gastrointestinal disorder," says David Carr-Locke, associate professor of medicine at HMS and director of endoscopy at Brigham and Women's Hospital, "trainees would often practice on a pig's stomach, set up to appear human." Today's clinicians have the option of enhancing their training with computer simulations that reproduce the look and, what's most important, the feel of a range of gastrointestinal endoscopic procedures.

The accuracy of the simulation is not perfect, admits Carr-Locke, who expresses confidence that, in a blinded test, he could probably distinguish between real life and virtual reality. "But, of course," he adds, "I've done tens of thousands of these exams. The point is: could a novice tell the difference? I think not, and this is where the value of this kind of haptic technology as a teaching tool comes into play."

The most useful purpose of haptic simulations, Carr-Locke says, is not to try to recreate all the subtle and complex pathological variations that might surface in real endoscopic examinations, a range so broad as to make the task of simulating it—in every sense—virtually impossible. Rather, he says, the value lies in their ability to remove the early part of the learning curve for residents and fellows.

"It's very much about trying to help someone acquire a basic skill in the most efficient way possible," Carr-Locke says. "A professional race car driver has to master basic driving skills before moving on to more complex challenges. The medical student learns instinctively that if he or she takes action X, Y will result."

Another advantage of the technology, Carr-Locke adds, is that it reduces the stress on students and patients alike. Trainees learning to perform a colonoscopy or sigmoidoscopy on a computer model can afford to be less tentative than they might be if they were nervous about causing discomfort to an actual patient.

As realistic as some haptic applications are—simulations can even be programmed to scream "ouch!" in response to a trainee's errant touch—Carr-Locke is quick to say that they can only supplement, not supplant, the experience of interacting with real patients. "Haptic simulations represent but one method in a repertoire of teaching strategies," he notes, "and cannot replace the actual clinical encounter." ■

surgeons what these tools do and don't do," he says.

"A big part of the resistance," DiGioia explains, "arises from various misconceptions about what robotics and computer assisted surgery mean. Not just the lay public but also many surgeons, especially those trained at least 20 years ago, summon up images of androids replacing surgeons. Nothing could be further from reality. The idea is to take advantage of the different strengths of computers and surgeons to complete a task better than either machines alone or surgeons alone could do." It will always be up to the surgeon, he adds, to decide what's best for the patient.

Few would dispute the advantages for a patient who undergoes a minimally invasive heart bypass procedure, or a trauma patient who, thanks to new telesurgical applications, may be treated by a specialist using robotic controls equipped with haptic feedback to carry out a procedure from afar. Still there are those who grumble that the new technology further depersonalizes patient/doctor relationships in an era in which cost constraints already afford physicians precious few opportunities for hands-on time with their patients.

Despite its sci-fi feel, this family of technologies could actually enhance the

patient/doctor relationship, DiGioia says. "With this new way of doing things, we can craft optimal patient-specific surgical plans based on an individual's actual anatomy. Patients will have more information, and these tools will be able to directly measure surgical techniques and relate them to surgical outcomes." Smaller incisions, he adds, lead to increased function earlier, a lower incidence of blood transfusion, less pain, and a quicker recovery. The unprecedented precision may also create fewer complications and reduce the need for repeat surgeries. "When patients understand the implications of the new technology," DiGioia says, "they're all for it. Choosing

A family medicine practitioner
reasserts the primacy of clinical touch
and the value of the physical exam

THE RIGHT TOUCH

IN ANTIQUITY, EGYPTIAN PHYSICIANS BELIEVED IN DIRECTLY touching wounds to heal them, and the kings and queens of England and France were thought to be able to cure scrofula through a laying on of the royal hands," says Lucy Candib '72, professor of family medicine and community health at the University of Massachusetts and a practitioner of family medicine for 27 years. "Yet, despite this ancient legacy of the centrality of touch to healing, the modern medical profession remains deeply ambivalent about touch."

more accurate, less invasive techniques, with less pain and a faster recovery, is everyone's goal."

Going Hollywood

The challenge now, DiGioia says, is to make the simulations high fidelity enough to look, sound, and *feel* like actual surgery. Touch, he points out, is just one of the senses that comes into play in the operating room, and the effectiveness of a haptic simulation can be undercut if the other stimuli present—the sights, smells, and sounds of surgery—are not enhanced enough to allow the surgeon to participate in an urgently

believable experience. For this reason, research on improving haptic feedback—producing the accurate sensation of tissue or bone resistance—is being conducted alongside studies on enhancing visualization. To make things look and feel real, the surgical profession has turned to a logical resource—the entertainment industry—to see if Hollywood's famous expertise in creating special effects illusions can carry over into medical education.

Down the line, DiGioia believes, what were formerly major operations, such as joint replacements, will become less complex as a result of computer-assisted tools and technologies. The

orthopedic profession is already seeing an increasing interest in new instruments, partial replacements, and tissue engineering. And eventually, DiGioia predicts, biologic implants will replace the metal and plastic parts currently in use, demanding a new generation of tools and techniques.

"To be able to perform joint resurfacing with a patient's own bone and cartilage will definitely require new computer-assisted tools and improved surgical techniques," DiGioia says. "This is an example of a goal that would have been regarded as impossible not long ago, but is now within the realm of the attainable, all to the benefit of our patients." ■

"Specialties within medicine do have distinct subcultures about touch," Candib says, "all the way from the proscriptions against touch in psychiatry to the mandate for touch in neonatal care." But, she adds, such subcultures reveal only a small part of what she sees primarily as an educational issue that raises overlapping questions of culture, training, and, especially, power. While physician educators have largely neglected these issues, Candib adds, the nursing profession has not.

Nurses have studied the impact of touch on patients in newborn nurseries, labor and delivery units, intensive care units, psychiatric units, chronic care settings for the elderly, and oncology wards. They have studied how patients respond to touch physiologically and have interviewed patients and each other about the effect of touch, including asking patients and colleagues to comment on videotapes of moments of nurses touching patients. "Underlying all this work," Candib says, "is the belief that touching is an essential component in the healing process."

By contrast, Candib says, "During the past 30 years, concerns about touch by physicians have revolved primarily around allegations of sexual abuse and malpractice issues. For the most part, medical training still does not address touch



directly, except possibly in courses on physical diagnosis or end of life care. I doubt that medical students receive any consistent message except the explicit one—that the only purpose of touching the patient is to glean information from the examination—and the unspoken message that touch is dangerous.”

A Touchy Subject

Despite the barriers to touch that exist, says Candib, caring physicians do manage to incorporate touch into their interactions with patients and not just as part of the clinical exam. “Most of these doctors feel that how they touch patients is crucial, whether it is part of the exam or apart from it. Palpating is the kind of touch that doctors expect to do, and it may be the only form that patients receive; of great importance is actually *how* we palpate—firmly, gently, thoroughly, briskly, tentatively—all convey meaning to the patient. Many doctors use a steadying hand on the patient’s right shoulder during the cardiac exam. It establishes physical proximity, a counter-touch to the stetho-

scope. It also sets boundaries by maintaining a certain distance, defines the activity as nonsexual, and allows the doctor to gauge the distance between his or her trunk and the patient’s body. And for some doctors it is a way of establishing connection.”

Yet, Candib adds, physicians generally need to be more cognizant of what she perceives as the huge power imbalance that typically exists between doctors and their patients. “Clinically appropriate touch is a double-edged phenomenon,” she says. “It can represent a powerful form of positive human interaction, but it also carries the potential to be abusive, sometimes in the hands of physicians who aren’t even aware that their touch is of an abusive nature.” The potential for misunderstandings of the effective use of clinically appropriate touch, she adds, has only grown in the past decade, during which, she says, “medicine’s attention has increasingly focused on randomized clinical trials as the gold standard of high-quality evidence.”

This increasing emphasis on clinical trials has led to widespread question-

ing of the purpose and utility of the traditional physical exam, Candib says. She speculates that such a devaluing of the physical exam may account, at least in part, for the increasing numbers of patients seeking care from alternative and complementary practitioners who focus on touch-centered therapies.

“Americans now spend billions of dollars out of pocket for someone to touch them in ways they perceive as healing and non-abusive,” she says. “Contrary to what some in the profession believe to be the decreasing relevance of the physical exam, the popularity of these complementary approaches with the American public suggests that people seeking care do indeed value the element of touch in clinical encounters.”

The discrediting of the physical exam, Candib believes, has also led, in turn, to a deterioration of clinical skills on the part of young physicians and medical students. Part of the problem, she says, is that the art of the physical exam is typically taught in a highly decentralized manner. The medical student rotates through different settings, learning to do an eye exam here and an ear exam there, without ever being taught a coherent, overarching philosophy of the physical exam and the role of touch in the clinical encounter.

The discrediting of the physical exam also reflects the advent of new diagnostic technologies, some of which have profoundly altered the role of touch in clinical practice. “When I was training,” Candib says, “everyone was schooled in the subtleties of how to listen for a heart murmur and how to analyze lung sounds. But today a physician who suspects the presence of a murmur in a patient will just order up an echocardiogram. The feel of a spleen, or the size of a liver, just doesn’t receive the same level of attention it once did. Perhaps the only area where a premium is still placed on old-fashioned physical diagnosis is in the detection—in conjunction with mammography—of a breast mass.”

Although she welcomes the use of technological aids that enhance patient care, Candib is troubled that physicians today are doing fewer and less thorough physical exams. She also expresses reservations about the ripple effect technology has had on attitudes toward the overall importance of clinical touch.



Many doctors use a steady hand on the patient's right shoulder during the cardiac exam. It establishes physical proximity, a counter-touch to the stethoscope."

"I was taught, for example," she says, "always to place my stethoscope directly on a patient's skin. Nowadays, it's not uncommon to see students place their instruments on top of the patient's garment." Whether they do this out of convenience, modesty, or sheer laziness, Candib says, "they convey the notion that the results don't really matter—nor do the patient's expectations."

Nonetheless, Candib readily concedes that, in some respects, the shift in emphasis has benefited patients. "Many physicians today won't bother to do a rectal exam as part of the physical exam. When I was in medical school, it was unthinkable for a patient to be admitted to a hospital without undergoing a rectal exam. In fact, the poor patient might even have to submit to three such exams, when, I think it's fair to say, one really is enough."

A Class of Touch

Another key factor driving the changing role of clinical touch, Candib believes, is the loaded nature of touch in an age of great vigilance about abuse. Physicians must take factors such as a patient's age and psychological condition skillfully into account. "If the patient is a two-year-old, say, or a paranoid schizophrenic, it's crucial to give that patient space," she explains. "And teenagers require a great deal of non-verbal respect for their body integrity."

Like many of her colleagues, Candib has developed a nuanced, personal style of clinical touch: "I generally like to start out an exam on a very young child by touching that child's shoe to gauge how close I can get," she says. "I will also tickle a baby's toes before I touch the baby's torso. For me, it's a process of respecting the patient's physical integrity and gaining their gradual

approval in a way that makes the exam seem less cold, scary, and invasive than it might have if I had simply forged ahead without taking the time to create a permission based exam."

But, not having been taught much about the prescriptions for as well as proscriptions against clinical touch, many physicians do not feel comfortable with such strategies, Candib acknowledges. Sometimes, she says, a physician's aversion to touch can even border on what she would describe as extreme.

"Some doctors actually fear touching their patients," she says. "I once had a patient with AIDS who was suffering from a difficult-to-diagnose skin rash and seizures. I sent her to a neurologist, who insisted on donning a full gown, mask, and gloves before examining her. The message to the patient was: you are unacceptably contaminated. Of course, I believe in standard, reasonable precautions such as thorough hand washing and the wearing of gloves, but we have to think about what signals we are conveying to sick patients when—and how—we touch or do not touch them."

Given the rapid pace at which technology is transforming all aspects of medicine from the examining room to the operating suite and beyond, Candib believes that it is crucial for medicine both to reaffirm the primacy of touch in healing and to teach future doctors a coherent philosophy of clinical touch. Complementary approaches may have something to teach mainstream medicine in this regard, she says.

Candib began thinking about what she describes as a "directness of touch" characteristic of many complementary disciplines when she sought out massage therapy to ease headaches she was suffering as a result of muscle tension in her upper back and neck. Based in part on this experience, she started an out-

reach program aimed at providing massage treatments to Southeast Asian immigrants debilitated by chronic pain.

"I was really struck," she recalls, "by how much attention is paid to the topic of appropriate clinical touch in the training of reputable alternative practitioners. The result is that such practitioners can go a lot further in terms of touch and still be respectful of their patients and maintain excellent professional distance. Nobody learns such protocols in medical school, although many good clinicians do, over time, develop their own personal styles." It would be helpful indeed, Candib says, to doctors and patients alike, if medical education formally advocated consistent, coherent philosophies of clinical touch.

But how, she asks, can physicians acquire such a philosophy when they learn that only task-related touch such as palpation is acceptable? "By not touching in any other way," Candib says, "we feel free to become unconscious about touch, and indeed we are often unaware of our nonverbal behavior, perhaps because we are tuning in so hard to verbal communication, both in form and content. To a great extent what we do with our hands has become unconscious, sometimes mindless, sometimes thoughtless. From such unconscious acts, poor communication and misinterpretation are born."

To avoid such misinterpretations, Candib suggests, "we need to rethink the role of touch in clinical care and resist the notion that the clinical exam can be discarded. And we need to refocus on the idea that respectful human presence and touch are central to clinical work." ■

Beverly Ballaro is associate editor of the Harvard Medical Alumni Bulletin.



A physician reflects on the centrality of touch in making patients better—and in making better doctors
by MICHAEL A. LACOMBE

AN INTANGIBLE ART

LONG AGO AND IN ANOTHER AGE, EACH summer before beginning work at the paper mill, I would visit the office of our border town's general practitioner for the mandatory physical examination. For a boy of 19, this ritual was a mix of bother and beginning: the former for obvious reasons and the latter because it marked the start of a new summer on the river, with no papers due, no all-nighters, no Saturdays in the stacks—just cash on hand and new student nurses rotating through the local psychiatric hospital, wanting to dance and drink beer. With these coming distractions, I could be just peripherally aware of the doctor and his office, calling it up only decades later when it would surface in my memory as a black-and-white film from the fifties.

Year after year, he would begin his exam with the same request: "Let me see your hands." And while he peered at them, and at my fingernails, looking for God knows what, I could in those moments steal a look around the room, which was, of course, in his home. There was the obligatory skeleton supported by a stand, on which a white lab coat hung as well. In a corner, the exam table stood partially hidden by a freestanding fabric screen. Pinned to the opposite wall, a yellowed, dust-covered chart, its corners curled, displayed four views of what I guessed was the heart. On top of

an equally dusty bookcase, shoved full of books in random disarray, his medical school diploma leaned against the wall.

"Hopkins," I said softly.

"The best in my day," said the G.P.

"Harvard is now, right?" I asked.

"They think so," he said. He motioned me over to the exam table, listened to my chest, had me grunt and bear down while he listened, made me stand and squat and listened again, then had me lie on my left side—and listened some more. It would be 30 years before I would know what these maneuvers indicated about him.

"Why are you doing this?" I asked, emboldened by the intimacy of the moment.

"Putting you on your side like this?" he replied.

"No, I mean why are you here instead of somewhere else?" I asked. "After Hopkins...you could be in Syracuse or Albany or New York City even, couldn't you?"

"The river," he explained.

"They've got rivers too," I said.

"Yeah," he said, "they do. But here I have the best chance to know my patients."

He left me with that legacy, one of getting close to patients, touching them, examining them, snatching glimpses into their souls.

Forty years later I've managed to hold to the notion that touching patients is vitally important. Patients expect you to touch them, for one thing, and when you bother to do so, they feel closer to you, and they become aware that you care. I believe they do better because of it. Maybe they trust you, and so take your advice and your pills, and call you when they're supposed to. Maybe that's why. And besides, proximity promotes chat. We called it taking a history.

But now there are forces to the contrary: the contracted time allowed with patients; the consuming belief in technology to the exclusion of intimacy with patients; and, sadly, the loss of trust in the art of medicine. It makes you either want to give it up, or search for some hard evidence that touching patients might still be a good thing.

So I left my practice in Augusta, Maine, to travel to one of the big hospitals to the south with the official purpose of acquiring a month's worth of education. I didn't admit that I was really looking for some hard evidence to prove something to myself.

Coming from the country, I found plenty of distractions. The hospital lobby alone had more people than in my entire hometown. And everyone under the age of 40 wore pajamas. But I found some important-looking senior men, clad in bowties and long white coats buttoned to the floor, who led grand parades here and there throughout the hospital. The bowties led me to my first breakthrough. You see, I knew from medical history that the bowtie had

come into fashion shortly after the stethoscope, that clinicians wore bowties so that, when leaning over a patient to catch the paradoxical split, the necktie never got in the way. I attached myself to one of the entourages to watch them touch patients and gather my data.

It didn't work. The entourages never seemed to reach anyone's bedside. Even when headed in that direction, they would stop in the hall, or in the doorway, and never actually make it there. And no one seemed to touch a patient. Usually, the groups avoided patient care areas altogether, heading to radiology instead, or to the echo lab. Here the drill was always the same. The bowtied professor would stand quietly at the head of the entourage and wait to be noticed. Suddenly everyone would freeze, as though someone had punched the "pause" button on the remote. The professor would ask to be shown "an image." Techs would scurry to do his bidding. Then the professor would expound on minutiae that had nothing to do with touching patients.

I could sense the fear in the students, residents, and fellows huddled in the back of the room with me as they waited to be embarrassed by some impossible question about metalloproteinases and vascular biology. There were no patients there, mind you. No need for them. And that in a way was a relief—the presumed ignorance of these young doctors would never be revealed to the discomfort of their patients.

My research was going nowhere. And I was beginning to doubt myself—always a bad thing when you're 60. So I hatched another plan. I volunteered to learn a medical technique—transesophageal echocardiography, which involved wheeling a large echo machine all over the hospital, washing the machine parts in various solutions several times a day, and filling out papers and forms. It was the perfect ruse. Everyone assumed I was an old man, stuck in a menial job, who hadn't figured out where they kept the pajamas.

They must have thought I didn't speak English either, because they talked freely in front of me, sometimes about cases and patients, but mostly about their jobs and their professors. So I watched and listened and kept my



mouth shut and wrote it all down. And no one except the most junior of nurses even noticed me, or helped me with the papers, or held the door for that big machine I was wheeling around. I kept my head down, obsequious and deferential. Here's what I learned:

- that the professors were disinclined to teach the young doctors, or were always in their labs doing meaningful research, or away on "visits," or just didn't seem to care;
- that when there was a potential teaching moment, the young doctors were made to feel stupid;
- that with so many patients to attend to, and so much paperwork and charting and clerical work, the young doctors began to resent patients, viewing them largely as a burden;
- that the young doctors spent precious little time together and hardly knew each other;
- that they knew even less about their professors, or what their professors believed, what they held important, what made them laugh, what frustrated them, why they were there, and what sort of life they thought might be best to lead;
- that the young doctors had come to believe that imaging was the important thing, that talking to patients and touching them was passé, just a footnote in history; and
- that because of this experience, they loathed the place, couldn't wait to leave, and didn't mind telling this to any applicant coming through.

Imagine my distress. Here in this place I had held most dear, in this grand

It was the perfect ruse. Everyone assumed I was an old man, stuck in a menial job, who hadn't figured out where they kept the pajamas.

hospital with a French restaurant right in the lobby where people bought cups of steam anytime they wanted, there existed this much unhappiness. Here—where I now ran up exorbitant hotel bills just for the chance to be among these doctors and ate congealed spaghetti at a galleria to keep expenses down—were young people getting paid to learn, yet hating the experience, marking the days like Edmond Dantès in the Château d'If. That happiness might be found in touching patients was not a message left to me to impart. Who was I after all, but an elderly technician wheeling a cumbersome machine from floor to floor?

Nor could I publish this. This would be viewed as soft stuff. I had no data, nor even a cohort. The bowtied professors would discount any paper of mine as mere recreational reading. I had only a week left, and my research was going nowhere.

And then I found her. She was sitting in a solarium up on the 12th floor with a student, talking quietly. I positioned my echo machine so that I could watch them discreetly and pretended to enter data onto the tape, adjusted knobs I had been told not to touch, and observed. The student was listening intently, nodding his head occasionally, hanging upon her every word. They went on in this way for some 20 minutes. And then I observed a peculiar thing. The professor leaned forward, reached out, and touched the student, taking his hand! He nodded his thanks, got up to leave, turned and smiled at the professor, and headed for the elevator. I wheeled my machine into the elevator after him.

"Excuse me," I said, "but I'm doing a study, establishing a cohort and so forth, and making observations. Would you mind telling me a little about the meeting you just had with your professor?"

The student stared at me with traces of shock and fear, as though I had somehow escaped from a neighboring hospital. He got off at the next floor. I couldn't really blame him. I had traces of green slime on my coat from washing machine parts. And I didn't have a bowtie.

But now luck was with me. A few days later, I went to the French restaurant in the lobby and there she was! The same professor! Sitting alone at a table in the back, with no one around. What did I have to lose? I was leaving in the morning anyway.

"Mind if I join you?" I asked.

"Not at all. Please do."

Silence.

"You teach here?" I asked.

She smiled, squinting at me with her blue eyes, then brushed back her gray hair. "You have something on your mind," she said.

"I do?"

"We're surrounded by empty tables. You sat here for a reason. Am I right?"

A diagnostician, I thought.

"I saw you sitting with that student the other day..." I said.

"I sit with a lot of students," she said.

"You do?"

"It's my job."

"It didn't seem like a job," I said. I was getting bolder. She seemed to engender that in a person.

"Yes, I teach here," she said. "And I love it. So it probably doesn't seem like a job to an observer."

"That's what I am. I'm an observer."

"I see," she said. I was in danger of being returned to a neighboring hospital, so I hastened to continue.

"What I mean is, I came down here to get some proof that touching patients matters, that it's still a good thing to do. I'm a doctor too, but from the country up north. I see patients all

day. Not like this. Not like you. But I love it. Like you do your students..."

"How perfectly noble," she said, interrupting. And I knew she meant it. She continued. "Well here, the students—and the residents and fellows—are my patients, if you can think of it that way. I touch them. Oh, not physically. I don't mean that. But I try to touch every one of them. I want to know who they are, and what makes them happy, and where they're headed. I want to share part of myself, so they can see I'm human too."

"I think it's important for their education to see me as a human being, as someone who cares, and who cares about them. That's touching them, you see. It's my hope they'll carry that away with them, remember it, value it, make it a part of their lives, and pass it on to their students. That's the tradition of teaching, after all."

"I envy you."

"Well, don't," she said. "We both do the same thing. My students are my patients; your patients are your students. It sounds as though you touch them and teach them. And you're right. Touching is important—the most important part of being a doctor, or a teacher. You can quote me on that."

She stood, held out her hand to take mine, then took my hand in both of hers and wished me luck.

Let me see your hands, I remembered my old G.P. saying to me 40 years earlier.

I left for home the next day with this N of one, hardly a cohort, but with data enough to satisfy me. And I left with the hope of someday publishing a study that might change, if not the world, then some certain place I hold most dear. ■

Michael A. LaCombe '68 is director of cardiology at the Maine General Medical Center.



thickened

swollen flushed

mottled

palsied

scarred

icy

clammy

smooth

marbled

An internist scrutinizes her patients' hands to uncover clues to their physical and emotional well-being *by* SUSANNA BEDELL

D SLEIGHT OF HAND

DOCTOR B., A PATIENT NEW TO MY PRACTICE, arrived punctually at nine in the morning, impeccably dressed in a white starched shirt and flowery Ferragamo tie. He was a 50-year-old neurosurgeon who wanted a "thorough checkup." His history showed that he was a healthy, avid jogger, and his only hospitalization had been for a kidney stone several years ago.

An examination of his hands revealed perfectly sculpted nails and warm, smooth skin. The only abnormality was a faint indentation on the medial aspect of the left thumb. As I held his hand and ran my index finger over this smooth valley, he became very quiet. It was undeniable—this perfect pair of hands bore one

sure flaw. I gently probed him for information, referring to patients in general who rub their fingers together, almost like a rubbing stone, to relieve anxiety.

My inquiry triggered an hour-long outpouring about the overwhelming stress in my patient's life, stemming from a potpourri of causes ranging from

As I pressed on the fleshy pink of her hand, the palmar vessels compressed and dilated. Suddenly warm teardrops began to fall on our hands.

managed care pressures at work to a wild adolescent at home. Dr. B. confessed that he used the corner of his blanket each night to rub his thumb and dull his anxiety, thus lulling himself to sleep. This deep secret, he confided, was one he had shared only with his wife.

This defining moment with Dr. B. changed what might have otherwise been a routine visit to one with ultimate therapeutic benefit. It may sound like an odd encounter, but variations on this theme are commonplace when medical practice includes touching, examining, and pausing over a patient's hands.

A Show of Hands

During my patients' visits, I have three occasions to touch their hands: the salutary handshake, my examination of their hands, and the parting handshake. All three have the potential to transform our encounter.

Just as hosts welcome guests with a handshake, physicians greet patients with an outstretched hand to assure them that they are welcome, and not a burden in a busy day. A sincere handshake conveys empathy and warmth. Doctors who offer a hand are also more likely to take the time to listen carefully. Those who feel they don't have time to shake hands may well be competent clinicians, but they are signaling that they probably won't be inclined to attend to the patient's emotional needs or to offer the hope and compassion that may prove to be lifesaving.

This initial handshake can also provide the doctor with hints about a patient's illness, character, or psychology state. Is the patient's palm warm and moist, suggesting hyperthyroidism

or anxiety? Does the patient pause in the process of shaking hands to greet the doctor with enthusiasm and confidence? Or does the patient's grip feel limp? Does the patient pull his hand back before the greeting is even complete? Such a gesture may not yield an actual diagnosis, but it does suggest that the patient is insecure, ambivalent, or anxious about visiting a doctor.

The Art of Palm Reading

The marvel and mystery of the human hand first caught my attention when I worked in a small, dusty pottery studio in Berkeley, California, the year after graduating from college. When not sweeping the floor or studying for my premed classes, I watched potters magically transforming mounds of clay into beautiful objects. Subtle changes in the pressure of these skilled hands affected the clay enormously, and the shapes, variation, and power of the human hand captured my imagination.

Early in my practice in rural Texas, I began observing my patients' hands out of curiosity. The hands of those Texas farmers differed from those I had encountered during my training in Boston. They were large, strong hands that had recorded life stories through signs of wear and tear on every crevice, knuckle, and palm. Visibly muscled, they reminded me of a potter's hands. And I began to observe subtle differences among my patients' hands, which had, at first, looked alike.

One patient, Mr. C., was a farmer who paid for his visits with the biggest, freshest, sweetest tomatoes I have ever tasted. He was a quiet, gentle man whose warmth and enthusiasm soon made him a favorite at the office. One

day when holding his hands to look for new calluses, I noticed that he had developed clubbing, a soft tissue swelling at the fingertips that can be associated with an underlying illness, such as cardiovascular disease or lung cancer. A chest x-ray that day revealed a small pulmonary nodule, a cancer that was small enough to be removed and cured with surgery.

Since that encounter with Mr. C., I have always begun each physical by taking my patients' hands in my own and studying them closely, both for diagnostic and therapeutic benefit. I've found that changes in the hands or nails offer invaluable clues to underlying disease in all organ systems. Thickened tendons in the palms, for example, may be indicative of diabetes. Painful lumps in the fingertips are sometimes associated with infection of the heart valves. And pallor with scooping of the nail bed suggests iron deficiency anemia.

Proliferation of tiny vessels at the base of the cuticle may develop in such rheumatologic diseases as systemic lupus. Whitening of the base of the nail can occur in cirrhosis of the liver, and longitudinal striations offer a subtle clue to hyperparathyroidism, an endocrine disease that causes hypercalcemia if untreated. And palmar erythema—pink palms—may be a sign of alcoholism or another cause of liver disease.

I once had a patient—an elderly, proper Bostonian woman—with a history of chronic burning in her abdomen. She adamantly denied drinking alcohol, yet nothing in her story could explain the origin of her pain. When I examined her pale hands, I found her palms warm and pink. As I pressed on the fleshy pink of her hand, feeling a mixture of curiosity and com-



passion, the palmar vessels compressed and dilated. Suddenly warm teardrops began to fall on our hands. She met my gaze and murmured, "You know, don't you?" This woman, married to a powerful and abusive man, had started drinking in secret to relieve her anxiety, and her hands betrayed the stigmata of chronic liver disease.

The compassionate taking of the hand not only enlarges medical histories, but can also help to minimize the shame that many patients feel about a history of depression or substance abuse. Ms. D. was a young woman who, years earlier, had struggled with a suicide attempt that had left scars on her wrist. She had been seen by many physicians and was skilled at maintaining a formal, reserved, distant posture. Talking with her reminded me of what it was like to piece together my adolescent son's monosyllabic responses when he was asked about his day at school.

After observing Ms. D.'s scars, I paused and ran my index finger gently over them in quiet recognition of what she had endured. We did not exchange words at that moment, but her eyes told me that this simple act had dissipated her impenetrable façade.

At times a diagnostic observation about the hands can be linked to therapeutic effect. One middle-aged poet with prominent ridges on her nails told me that she always tried to hide her hands, because she felt ashamed of them. What I saw, though, were ele-

gant, powerful hands with muscles around the right thumb well developed after years of writing. My immediate association was with Georgia O'Keeffe's statuesque hands, as photographed by her husband, Alfred Steiglitz. Sharing an analogy to an artist undoubtedly altered this woman's impression of her hands and perhaps, in some sense, of herself.

Taking a patient's hands is more than a simple ritualistic act: it establishes a moment in which the doctor can achieve an active, undistracted concentration on the patient. This act can become a safe point at which the doctor can pause, establish an inquiring mindset, and experience the focused, critical self-reflection often referred to as mindfulness. Because everything they have to reveal is evident by simple observation, the hands offer a unique opportunity for the physician to become totally engaged with the patient and his state of mind.

The therapeutic value of looking at the hands derives not only from the diagnostic insights it provides, but also from the power of touch. Especially in this era when touch often has a bad name, and medical evaluation has become increasingly technological, taking the patient's hands assumes an even greater significance. A thorough physical exam involves touching the patient in intimate ways. Sitting knee to knee and taking the patient's hands is a nonthreatening way to establish physical contact.

Unlike other aspects of the physical exam, which may take the form of poking or prodding, examining the hands requires holding them. I like to hold one hand at a time, explore its

details, turn it over, and gently return it to the patient's lap. As the evaluation progresses, I can feel the hand—and the patient—relax.

Such a lending of the hand is a way to establish the connection that both doctor and patient crave, as well as a means to empower patients as engaged participants in their care. Taking the hand is a nonverbal, nonsexual, non-threatening way for physicians to reassure patients, "I will take care of you."

The final taking of the hands is the parting handshake. This farewell clearly delineates the end of the meeting and reinforces the positive relationship that both doctors and patients seek. It allows patients like Dr. B. or Ms. D. to look the doctor in the eye and to be reassured that no matter what has occurred during the office visit, no matter how vulnerable they have felt, the doctor has understood, valued, and respected them.

The rhetoric of cost-effective medical management is often counterbalanced by pleas for caring. How do we translate these well-intentioned words into action? What specific guidelines can we give our students and ourselves to heal the depersonalized relationship between physicians and patients? Careful examination of the hands may be a route to this end. It is one means to pause with the patient, thus emphasizing that the humanistic aspects of attention, touch, and personal history are as important as the scientific or quantitative elements of medicine. ■

Susanna Bedell '77 is an assistant professor of medicine at Harvard Medical School and an internist and director of the Diabetes Clinic at the Lown Cardiovascular Center.

A physician reflects on the intersection of flesh, spirit, and steel

THE MACH

by RAY BABINEAU Radiation begins today. An earlier surgical effort to remove my prostate cancer had met with only partial success, as the growth had already escaped the surgeon's reach. The operation had been quick, three hours of unconsciousness. Now we try another tactic: radiation for two months, five days a week. Plenty of time to be fully conscious as I do my time under >>

IMAGE: UHB TRUST/STONE



INE

I

In medical school, I had been taught to fear the force of

the machine. I yearn for the eradication of my cancer, but a statistician would say it looks dicey.

I drive daily to the cancer center. During my own medical training, the word "cancer" never appeared on any building, but now I find it emblazoned near the entrance.

Separated from the unplanned sprawl of the medical complex, the cancer center affords private parking for its patients. Inside, the staff members are unusually friendly; I suspect they've been preselected to work here. The atmosphere is pleasant, the way a hospital should be but usually isn't. Then I remember that to receive all this tender loving care, you have to hold a specific admission credential, and I've got it.

I descend in the elevator from the ground floor to the basement, a location dictated by the sheer tonnage of these high-tech machines and their shielding. My own treatment room is dominated by a linear accelerator, which requires the ceiling and walls to be lined with lead three feet thick.

First, a short stay in the waiting room, which has been thoughtfully furnished with comfortable seats, a lounge chair for patients undergoing chemotherapy, and an overstuffed rocking chair as inviting as a grandmother's lap. Bright orange fish peer at me unblinking from inside their large tank.

On my first visit I discover the etiquette here: we all say hello to each other, regardless of whether we have met before. Instant equality and camaraderie. It is forced, yet real. Two retired construction workers discover they worked for rival companies. Soon enough, matching acquaintances emerge: "You knew Larry Welch? He was such a great guy!" I notice "was," with a new sensitivity to the use of the past tense. Mortality and fear are the great levelers in this waiting room.

My turn arrives, and I enter the chamber to meet my machine. It is immense, cool, and white. The business end of the linear accelerator rides on a gigantic arm that rotates 360 degrees around the treatment table. It looks like something out of the film *2001: A Space Odyssey*,

which seems fitting since it's 2001 and here I am, about to embark on my own journey into the unknown.

The radiation technologist instructs me to lie on the table. She places a towel across my groin and asks me to raise my shirt and lower my pants and underwear. To minimize movement, she binds my feet together and folds my arms across my chest to remove them from the radiation field. I lie there in my loincloth, staring at the ceiling. Directly above me, cut into the ceiling tile, I see a crude set of lines resembling a cross. A second cross, this one laser-lighted, shines through the first to mark the spot that will align my position on the table with the eight precise dots that are tattooed onto the skin of my abdomen, almost like the grid for a ticktacktoe game. The ceiling cross reminds me of the countless times in childhood when I stared at a crucifix. It feels like a big "gotcha, at last!" Or in any case, the lottery of biology.

Across the room I see a row of head masks neatly aligned on a shelf. Each one is made of a wide plastic mesh that has been hardened around a patient's face in preparation for radiation. The masks are carefully labeled with names. (You don't want mistakes here: wrong head, wrong treatment.) One of the masks has the nose portion trimmed away. Big nose? Claustrophobia? Irradiation of the brain requires complete stillness. I have seen these folks in the waiting room—their tattoos are on their heads, newly bald. No hiding for them. I wonder whether they get to keep their masks as souvenirs. And I remember an image I had seen in childhood of a monk at his study table, with a book, a candle, and a human skull sitting to the side. Daily he is obligated to take the skull into his hand and contemplate his own mortality.

To my right is a computer screen simply stating my name and hospital number. Below are listed rows of numerical coordinates of my pelvis. I had expected something jazzier, a colored, three-dimensional virtual reconstruction. I had even toyed with the idea of using it as a holiday card for family and friends. But no, just naked numbers.

The technologist flashes me an obligatory smile and pronounces everything "A-okay" for the treatment to begin. She scuttles out of the room to take refuge behind the shielded wall: not even a small window there, just a television monitor and a PA system. I understand why my cancer has to be here, but why me? And then I remember our intimate attachment.



I step into the empty compartment and push the button. It's then I notice the manufacturer's nameplate: "Schindler: Capacity 4500." I hope I'm on his good list.

radiation, but now I must give it a grudging acceptance.



PHOTO: RA: BAP NEA

"It's an interesting thing, Ed. I am trying to find ways to

Motors begin to whirl faster and faster inside the linear accelerator, speeding up the photons that will be hurled right through me. A large green sign begins to blink steadily: "Ready." Ready or not, here it comes. The technologist instructs me over the PA system, "Breathe normally now." A red sign glares: "Beam On."

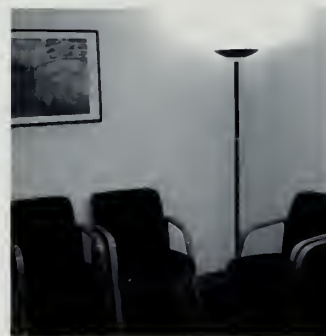
The treatment lasts only a few minutes and is not discernible to me. Invisible forces are at work. I try to think positive thoughts, to be a cheerleader for my own survival. The radiation targets cancer cells, but those cells are mingling promiscuously with normal cells. In medical school, I had been taught to fear the force of radiation, but now I must give it a grudging acceptance. New game, new rules.

The whining motors fade and the technologist reappears from her safe grotto and ushers me courteously—but firmly—off the table as it descends. "No jumping, please," she cautions, revealing long experience with anxious patients all too eager to leave this lead cave. With buttons and zippers I reassemble myself and follow the technologist to the elevators rising out of this basement of dense shielding, energy, and penetration. I step into the empty compartment and push the button. It's then I notice the manufacturer's nameplate: "Schindler: Capacity 4500." I hope I'm on his good list.

Trading Places

By the second week of treatment, the waiting-room faces I see at eight in the morning are familiar, an "old guys' club," most of us with prostate cancer. But today, there are new faces too. A woman walks in shyly, wearing a colorful bandana. She appears to be in her mid-thirties. She smiles briefly, then rummages through the magazines. Does she feel ashamed of her baldness? Is she resentful that cancer has smacked her at such a young age? Cancer, always untimely, is an individual attack of bioterrorism. She picks up *Reader's Digest* and holds it close to her face, providing a shield of privacy, so easily stripped away here. Judging from the front cover, I'd guess she is reading the article called "Hero of Health."

Another new face: a biker, obese, bearded, with a tangled sprawl of unwashed hair, barely tamed into a ponytail. I'm sure he doesn't want to lose that plumage. From the back pocket of his jeans swings a heavy chain securing his wallet. That chain could be



handy in a fight, and I wonder if he has to take it off during treatments. Toughness doesn't provide much protection here, where radiation can cause you to soil your pants helplessly. As he bends over to pick up a magazine,

he reveals the crease between his buttocks, a private cleavage. On his hairy arm a tattoo reads: "I'm in Hog Heaven on my Harley." Ah, heaven.

Then I recognize someone I know, sitting in a corner chair, wearing his white coat and dangling university ID card, and filling out the initial questionnaires. A new kid on the block! He is also a physician and we have shared patients over the years. We're both in our sixties, when name recall has become spotty, so we each mention our own names first, to avoid embarrassment, then proceed.

"What are you in for, Ed?"

"Prostate cancer. How about you, Ray?"

"Same. Radiation and a few months of androgen blockade. You?"

"Same thing. The whole works. Trying to be sure."

But we both look at each other, knowing that nothing is sure.

"It's an interesting thing, Ed. I am trying to find ways to incorporate the cancer into the rest of my life."

"Yeah?" He pauses for an instant, then glances downward and begins to underline his journal articles.

The other patients in the waiting room seem puzzled. Two doctors—one in a white coat, one in civilian garb—here for cancer treatment. What's wrong here? Don't union rules prohibit physicians from crossing over, becoming scabs? Sadly, no. Even though we've apprenticed ourselves to diseases for a lifetime, we must learn some of them from the inside out.

Rays of Hope

The radiation oncologist is a patient man, putting up with my requests for detailed information with great tolerance. Perhaps he's even pleased that someone

incorporate the cancer into the rest of my life.”

shows this much interest in his work—at least I tell myself that to avoid the fear that he might be irritated by so many questions. The difficult dance between doctor and patient in which, underneath it all, the doctor pleads for confidence: “Just trust me on this and we can get on with it.” With my questions, I scratch about for reassurances but disguise it all as pleas for information.

I ask him about the plan for treatment and he unrolls what looks to me like a sheaf of blueprints. They are somewhat smaller than those for a house, but as he folds back each leaf, I realize that this is a computer simulation of my pelvis. MRI and CT scans have been combined and, by an invisible microtome, I have been sliced and diced, one centimeter at a time, from my navel southward. At first I feel gratified to have had my house mapped out in such colorful detail, but when I see him marking the area where my cancer has spread, my pleasure dissipates.

With the sharp lead of his number 2 pencil, the doctor then sketches the zone where he will widen the field of radiation, hoping to eradicate the recurrent cancer. I silently cheer the hopefulness of this aggressive attack on the target zone until he points out the risks: since the cancer adheres to the bowel, wider radiation will also damage the normal bowel wall and surrounding tissues. The good comes wrapped up with the bad.

“Most likely, many of the side effects will diminish within a few months after the radiation has stopped, but”—here, in this litigious age, he pauses—“I have to mention that a certain percentage of men will have long-term side effects.” The major effects being some degree of damage to bowel or bladder, as well as to two precious nerves. A pain in the groin.

Feeling discouraged, I don’t ask for the numbers. I’m tired of statistics. For the past ten months I’ve been falling to the wrong side of the curves. I’ve been extraordinarily fortunate in my life, but now I feel like I’m on the ninth life of the lucky cat. I tell this to Charmaine, my wife, and she gives the kind of reply that has helped sustain me for more than 40 years: “Oh, I don’t think so. At the very most the sixth!” With support like this, my old house might be standing for a while. I’m uncomfortable with words like “cure” or “survivor.” We’re all just delayers.

My moods are sometimes dark, but at other times I’m so upbeat that I recognize signs of mania. I’d like to live

and do a dance across the face of death. A Zorba the Greek kind of thing. Especially now that I’ve had months to contemplate my disease and the threat of death, I find myself ambitiously planning all sorts of things. With the prognosis stretching out for at least some years, I have no excuses. No more vague procrastination. If not now, when? Nor can I use the short-timer’s excuse of—“I’ve got to settle my affairs, couldn’t possibly start anything new.”

Even my journal feels ambitious. Extravagant fantasies flicker through. I imagine nonchalantly asking Charmaine, “Has the *New Yorker* called yet about my manuscript?”

“Yes, and they were very sorry to say they have to turn it down because they’ve published a lot of death and dying stuff lately.”

“Oh!”

“And someone else has a prior claim on the Zorba the Greek, full-catastrophe trope.”

Damn. Disappointment sits on my head and trickles down. Well, I’ll still write for myself and whomever I can con into reading about my experience. I will treasure the responses that do come back. My cancer has become a litmus test of relationships. “We can always talk about the weather,” I say, my sarcasm the cutting edge of my rage.

I reread parts of biographies about Freud’s and Darwin’s struggles with severe illnesses. For 16 years, cancer had painfully eroded Freud’s palate, jaw, and cheek before it finally killed him. Following his return from around the world on the *Beagle*, Darwin was besieged by a still-hard-to-define somatopsychic monster that intermittently paralyzed him for months at a time with nausea, anxiety, and deep depression. This was followed by progressive cardiovascular disease.

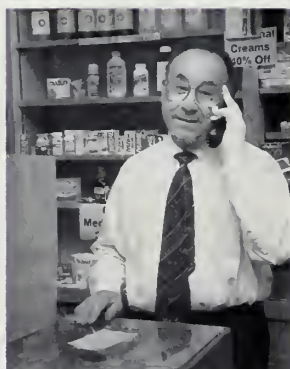
These guys did not withdraw to sit by the swimming pool. They went into high gear and did some of their best work before inevitably succumbing. The observing part of my brain cautions: “You’re making grandiose comparisons, my friend.” The feisty part of me says: “You know how important it is to have heroes.”

So it goes. It’s never lonely in my head. And it’s time to get busy. ■

Ray Babineau ’63 is a professor of psychiatry at Strong Memorial Hospital in Rochester, New York.

SPARR'S PARTNERS

When Sparr's Drug Store closed its doors after nearly 70 years of serving HMS, it



THE LOUD THUMP WAS AUDIBLE EVEN ABOVE THE NOISY CLACKING OF the Green Line subway cars shuffling along the Huntington Avenue track. Pretending to glare at the mortified first-year medical student who had fumbled a boxed set of diagnostic instruments to the floor, Arthur Sparr jokingly insisted, "Hey, you drop it, you buy it!" With a wink, he quickly added an aside: "See how I treat my customers?" ■ In the bustle of selling off his inventory prior to the permanent closing of Sparr's Drug Store in the spring of 2002, the owner's trademark courtesy showed no signs of diminishing.



marked the passing of a storied institutional relationship *by* BEVERLY BALLARO

It was the playful, friendly atmosphere of this small drugstore and lunch counter clinging to the edge of the School's campus that had kept HMS students streaming through its doors for nearly seven decades.

Arthur Sparr's father, Joseph, got started in the drug store trade as a teenager when he went to work in his uncle's New York City pharmacy. In

1933, Joseph moved to Boston and purchased property on the corner of Huntington and Longwood avenues, where he set up shop.

Sparr's Drug Store quickly established itself as an indispensable point of reference—both geographical and social—on the School's campus. Even a disastrous 1949 fire did not deter Sparr's from fulfilling its mission.

Joseph moved the operation to temporary headquarters in a building next door and ran his business out of that cramped space while reconstruction took place. A year later, Sparr's reopened the doors to its original location. The drug store would remain open for the next 52 years.

Arthur began working in the store in 1943, just a few years before the fire that had >>

GENERATION Rx: Joseph Sparr (above) began his career working for his uncle's drug store in New York City. He opened Sparr's Drug Store in Boston in 1933, and his son Arthur (opposite page) joined the family business a decade later.

HEY,

you drop it, you buy it!" With a wink, he quickly added an aside: "See how I treat my customers?"

nearly wiped them out. Like his father before him, Arthur was still a high school student when, in 1943, he joined the family business. "With the war going on," he recalls, "there was a labor shortage in the country. My father needed the help, so he turned to me." (Arthur's brother, Harold, also joined the family business before striking out on his own in the 1970s.)

"I remember how funny it was to see our customers coming into the store in their army uniforms," Sparr says. "They were medical students one day and soldiers the next." His father, he adds, often brought home for dinner some of the young students he befriended through the store. Recalls Sparr with a laugh, "I got to know some guys who went on to famous medical careers when they were still wet behind the ears."

An Instrumental Role

For hundreds of HMS doctors, both famous and obscure, the short trip from the Quad to Sparr's to purchase a first set of medical instruments was an institutional rite of passage. Sparr can't count the number of occasions over the years, he says, that HMS alumni have come up to him and exclaimed, "You were just a young whippersnapper when you sold me my first stethoscope!"

As if on cue, a recent graduate, en route to a cardiology fellowship in New York City, seeks Sparr's advice as to whether he should upgrade to a stethoscope more sophisticated than the Littmann he had used while at HMS.

"Years ago," Sparr confides, "everybody bought the same basic diagnostic set: ophthalmoscope, otoscope, tuning fork, reflex hammer, and, of course, stethoscope. Today you have fancier versions of these same tools but, if you ask me, a lot of it isn't necessary—just bells and whistles."



If the tools of the trade haven't evolved much over the course of the nearly 60 years he served the HMS community, Sparr says, the types of students purchasing those tools have changed dramatically. The "arrival of the ladies," as he refers to the 1945 admission of the first women to HMS, stands out in his memory. Although the diversity of the students has increased greatly, their general character has remained steadfast, in Sparr's view. "Students aren't always the easiest people to deal with because they like to challenge authority," he says, "but to the end I always loved working with them."

His affection did not go unrequited. For many HMS graduates, the Sparr's experience is intrinsically bound up with the memory of the passage to the world of adulthood as well as of medicine. In the delicate recollection of one graduate from the 1960s, who prefers to remain anonymous: "Well, how shall I put it? Before birth control pills, Sparr's was a key player in many a Saturday night date; lots of male alums have a story about that."

Yet bragging rights for the most noteworthy Sparr's transaction may well belong to Lloyd "Holly" Smith '47. As a fourth-year student, Smith was asked to

work with the late John Merrill '42 to make a new artificial kidney operative.

"We had to start from scratch, including formulating the dialysis fluid," Smith recalls. "At that time we had no appropriate pumps for returning cleansed blood to the patient, so we had to construct one from a refrigerator pump. In addition, no non-wettable containers to reduce the tendency toward clotting were available to couple with the pump. In a moment of inspiration, we hit upon the use of condoms. As the junior member of the team, it was my task to go each Monday to Sparr's to purchase a gross of 144 condoms. Never since have I been held in such awe and respect for my presumed amorous powers as on those heady occasions!"

Seeing Sparr's

Loyal connections forged between the Sparrs and HMS alumni tended to persist for decades after the students graduated. According to Daniel Federman '53, a classmate returned to his native Germany after graduation from HMS. "He became an outstanding thoracic surgeon," Federman says, "and came back to visit during our 25th reunion. When he



ALL IN A DAY'S WORK:
(From left) Arthur Sparr seated at the lunch counter, staff waiting for the lunchtime crowd, Sparr searching through boxes in his storeroom, Sparr helping medical student Kevin King '05.



walked into Sparr's for the first time in a quarter century, the counterman recognized him immediately as "that guy who went back to Germany!"

Federman himself also enjoyed the sustaining benefits of the Sparr's experience. "To save money when I was a student," he says, "I ate at Sparr's many times and nearly always had pea soup and nothing else. If pea soup in general, and Sparr's version in particular, had had any important toxicity, I probably wouldn't be around today."

Besides the otoscopes and EKG calipers—not to mention the cheeseburgers and frappes served at its lunch counter—Sparr's drew HMS alumni into its orbit for the fellowship it provided. Says Don Bienfang '64, "Like most of my classmates, I think of Sparr's as the place where we made the exciting purchase of our first tools of medicine—I still have the stethoscope I bought there in 1961. But the relationship went beyond that. Arthur and his Dad knew us all and some of us even rented rooms above the store when we moved out of Vanderbilt Hall."

Michael LaCombe '68 remembers the advice and favors, large and small, that the Sparrs dispensed his way: "They told me which stethoscope to buy, suggested which Boston paper I should begin reading (the *Globe* in preference to the *Herald*), saved the *New York Times* for me, kept a tab when I didn't have any money, told me not to study on Saturday nights (too much fun stuff going on in Boston)—and old Mr. Sparr sternly advised me that I should relax and enjoy my four years because Harvard would never flunk me out!"

"In many ways," adds Stephen Pauker '68, "the Sparrs functioned as parents, as the greater extended family—and a lovely family at that—to many, many medical students over the years." Pauker's close relationship with the Sparrs reaches back to his second year at HMS, when he worked as their sales rep, showing black bags and other medical equipment to his classmates and collecting their orders.

Pauker has purchased many of his own office supplies and every stethoscope he's ever owned for the past thirty-odd years of his medical practice from Sparr's.

Pauker expresses his fondest appreciation of the Sparrs, however, for the constant, cheerful support they offered him. "I used to go by there three or four times a week and they were always encouraging, whether the talk was about the life of a doctor or just life in general," he says. "And they were kind and helpful in the way you'd expect family to be. When I got married at the end of my third year and couldn't find an affordable place to live, the Sparrs came to the rescue by renting me and my wife—also a medical student at the time—our first apartment."

Over the years, the HMS community has expressed its gratitude to Sparr's at more than one Alumni Day celebration at which the proprietor has been an honored guest. HMS students have paid tribute in more creative ways as well. "Most of my classmates bought all their medical equipment at Sparr's, whose motto was, 'If we don't have it, you don't need it!'" remembers Thomas Gutheil '67. "In recognition of the centrality of the store in our beleaguered student lives—not only for medical supplies but for the odd magazine, hasty breakfast, candy bar, kind word, and such—in our Second Year Show, we immortalized our alma mater as Sparr's Medical School, whose motto was, 'If we can't cure it, you don't have it!'"

The show's plot revolved around the School's victory in the medical Olympics. The rousing School fight song belted out by the show's students featured memorable lyrics:

Rake those dollars into the till, here's to Sparr's victorious still,

Sparr's is best, forget the rest; Sparr's is the greatest with the latest!

Sparr's has got the whole world by the epididymis,

Sparr's, Sparr's, SPARR'S!

This song, Gutheil reports, "with or without tuba accompaniment," is still sung at reunions of the Class of 1967. "For so many people in our class, Sparr's offered students a personal connection," Gutheil adds. "The sons knew many of us by name, and we used to tease them by Bostonizing their names: 'Hey, Aaathuh, how aayah?' Many of us are quite saddened by the end of such a valued institution."

All Good Things

Arthur Sparr, too, will miss the many graduates who went on to set up practice locally and stayed in touch with him over the years. Given the low profit margin created by selling just above cost, as Sparr did for many years, his operation has no heir apparent. For the time being, though, fans of the gastronomic fare available for so many years at the Sparr's lunch counter may console themselves with the offerings of Sparrific, a full-service restaurant whose menu features many classic items from the Sparr's of old—omelettes, burgers, and grilled cheese sandwiches—served up in the same space that the fabled drug store recently occupied. But the School, which purchased the building for an undisclosed sum, eventually plans to construct new facilities on that site, to fulfill its space-starved needs.

Although its physical structure may be destined for demolition, the legacy of Sparr's Drug Store will endure in HMS lore. A wrecking ball cannot vanquish the rare camaraderie that flourished among his customers for nearly seven decades, Sparr says: "You'd have a Nobel Prize winner sitting on a stool at the lunch counter next to a guy who had just gotten out of the slammer. How many places are there like that?" ■

Beverly Ballaro is associate editor of the Harvard Medical Alumni Bulletin.

{ THE RELUCTANT }



Physician

A Boston blue blood with dreams of trading his stethoscope for a farmer's plow finds he can't turn his back on a community in need

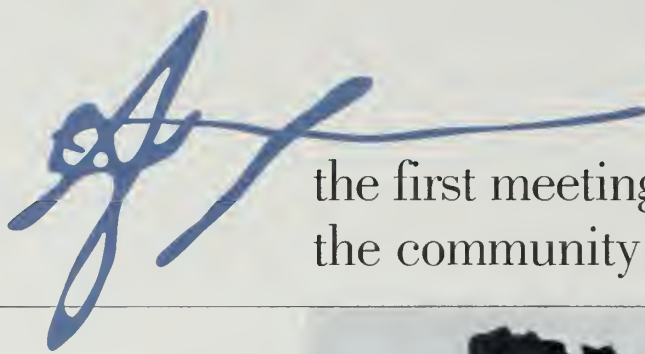
MANYBERRIES IN JULY 1948 WAS HOT AS HELLFIRE.

I had just broken the axle of my entomology survey truck in the sand hills south of this rural hamlet in Alberta, Canada. The town owed its name to the Blackfoot, who had dubbed the nearby creek Akoniskway ("many berries") because of the trove of chokecherries and saskatoons that grew there. The charm of the native legend was far from my mind on that sweltering summer day, however. After hitching a ride into town to arrange for towing, I joined my survey crew in the local beer parlor. It didn't look like our truck was going to get fixed any time soon.

by STERLING HAYNES



rites of passage:
Friends in the Orion
area gathered with Doc
Bartlett for his birthday
in 1938 (left). The train
stop at Manyberries,
the hamlet Doc called
home after leaving
Boston behind (above).



the first meeting, he kept talking about the community knew what that meant,

Our meeting place was in the bar of the only hotel in town. The slovenly keeper wore a sweatshirt that proclaimed, "Manyberries isn't the end of the world, but you can see it from here." Tacked onto the wall behind the bar was a flyspecked portrait of King George VI and a Union Jack. A stuffed albino pheasant perched on a shelf above the flag.

It would be 47 years before I again set foot in Manyberries, this time to study the life of Dr. Samuel Bartlett. By then, I had a lifetime of general medicine practice to guide me—and give me a keen appreciation of what a godsend Doc must have been to his adopted community.

Wandering Brahmin

Samuel Bartlett was born in Boston in 1875. When he graduated from Harvard Medical School in 1899, he promptly joined his father's medical practice in Boston. To make himself appear older, the young physician grew a beard.

His father, George Pinksham Bartlett, had also attended Harvard Medical School, from 1869 to 1871, although he never actually graduated. George Bartlett had been something of a prodigy, earning his bachelor's degree from Tufts University at the tender age of 14 before taking up the study of both dentistry and medicine at Harvard. Acquaintances described him as "a man of genial nature, wide information, and most agreeable manners, and a surgeon held in high rank."

Sadly, George Bartlett died suddenly of meningitis less than a year after his son's graduation from medical school. Perhaps it was his father's death that caused the younger Bartlett to give up his medical career at his father's Boston sanitarium and venture to southern Alberta to seek a much different life.

According to those who knew Doc, the only glimpse into his past that he ever revealed to the Manyberries folks involved the story of how he came to be partially blind. While playing hockey as



NINE LIVES: Doc Bartlett's devotion to cats was legendary (top left). Before settling in Alberta, Doc spent some time laboring on various construction sites in Fort Steele, British Columbia (top right). When not tending to his patients, Doc tended to the 60-odd pigs and horses he kept on his Manyberries farm (above).

the 'ex-officio' members 'having a say.' No one in but the Doc soon learned 'em."



a youth, he had sustained an injury that cost him the sight in one eye. Although various rumors circulated over the years, he never discussed with the members of his adopted community the impetus behind his journey from the urban, intellectual climate of Boston to the rough prairie frontiers of Canada.

"The Last, Best West"

When Doc landed in the new province of Alberta, he joined an exodus of settlers who had been streaming steadily into the Canadian West since the turn of the nineteenth century. Spurred by the completion of the Canadian Pacific Railway, between 1895 and 1914, more than a million settlers made their new homes in what was once described as "the last, best West." To entice settlers to the vast,

underpopulated expanses of the Western prairie territories, the Canadian government offered inexpensive, plentiful land and an environment of social and religious freedom. Many of the settlers emigrated from the United States; by 1915, approximately 82,000 Americans had settled in the province, making up nearly a fifth of the total population.

Once he joined the legions seeking a new life north of the border, Doc seemed to have abandoned not just his Boston roots but his medical career as well. Perhaps inevitably, though, given the hazardous quality of life in that time and place, his old calling crossed paths with his adopted one; while working as a transient harvest laborer on a threshing crew in Manitoba, Doc successfully treated a fellow worker who had broken his leg. He subsequently wandered to Fort Steele,

British Columbia, where he put his Harvard-trained physician hands to work in various construction jobs and then to the Lethbridge district of Alberta, where he toiled on the Northern Irrigation Project.

It was the lure of new land that finally attracted Doc to settle down in the Glassford district south of a place that came to be called Orion. Today, Orion is one of many ghost towns dotting Alberta. Although the tiny hamlet still boasts seven or so hardy souls in residence, they live on streets lined with empty homes and abandoned buildings.

When Doc set up his homestead on the bank of Manyberries Creek, in the winter of 1911, though, Orion was still in its infancy. With dreams of becoming a farmer, the doctor pre-empted a half section on the creek and carved a dugout shack into its bank. This under-

Doc

walked the Black and White trail to to obtain a supply of sulfa for four



ground earthen hut, friends reported, was always a mess. Living alongside Doc and his collection of medical books were pigs; his pet boar, known affectionately as Jojo; cats; and horses.

Yet the doctor's crude and remote dwelling also harbored an oasis of civilization within; according to his nearest neighbor, Barney Gogolinski, the doctor always kept up with his medical journals and popular magazines, including the *Saturday Evening Post* and the *Atlantic Monthly*. And he corresponded regularly with his sister, Madeline. But no one in Manyberries remembers him ever traveling East or receiving visits from Massachusetts friends, family, or classmates.

The one connection Doc did maintain to his past was a distinct Boston accent. This he combined with a large vocabulary, much in evidence during his officiating at local town meetings. Barney

Gogolinski recalled how "the Doc" always abided by Robert's Rules: "At the first meeting, he kept talking about the 'ex-officio' members 'having a say.' No one in the community knew what that meant, but the Doc soon learned 'em."

Country Doctor

As reported by his patients, the doctor was meticulous, taking great care to sterilize his primitive instruments. He did midwifery and minor surgery and gained renown for the fussiness of his reduction of fractures, which he immobilized using narrow slats of applebox wood tied together. He also pulled teeth.

During the worldwide flu epidemic of 1918 to 1919, Doc toiled ceaselessly and dispensed quinine with a lavish hand. He was ably assisted in his efforts by nurses and volunteers, and the deaths were

remarkably few. He even consented to be licensed as a medical health officer with a special permit to practice medicine, a license he never bothered to renew.

After the epidemic, Doc declined offers to practice at the Medical Arts Clinic in nearby Medicine Hat, an important business center that had sprung up when the Canadian Pacific Railway made its way west. Instead, he was content to garden, growing watermelon by the wagonload, and care for the livestock and his many cats back in his Manyberries shack.

It took a tragedy to compel Doc to abandon his beloved dugout. Some neighbors inhabiting a similar structure died of carbon monoxide poisoning when a freak snowstorm covered their chimney and door. It was soon after that Doc settled in the town of Orion. This meant losing his home- stead, but the people of the district

Medicine Hat, a distance of 50 miles, town children who had scarlet fever.

built the doctor a small house. With this house, his magazines, and his unofficial medical practice, he appeared to be a contented bachelor.

Odd Man About

The folks of Manyberries and Orion tolerated the doctor's eccentricities. As the unofficial physician serving a widely scattered community of pioneers, most of whom lived dozens of miles away from the nearest hospital, Doc earned the trust and gratitude of his patients, with few questions asked about why he had given up his medical practice in Boston.

Doc was said to have had a shifty look because of the peculiar squint in his injured eye. The children were frightened of his bad eye, ragged beard, bib overalls, and serious demeanor, but the adults considered him an honest man.

It was common lore that Doc loved to chew "snooze." Since his patients knew of his passion, he never had to buy any. With a large pinch—three fingers and a thumb—he could empty a box. His voracious appetite for food was surpassed only by his olfactory senses. It was rumored that he could smell bread baking a mile away. After a large meal, he was not above criticizing the cook's efforts, albeit in a good-natured fashion.

Doc was a frequent presence at many dinner tables, since he rarely accepted money for his medical services. He was paid in kind: bread, beef, beer. One old timer remembers a dinner that Doc was supposed to eat with a group of men. During an argument over a card game, which distracted the other guests, Doc single handedly consumed the entire meal of cabbage and sausage casserole.

In the early 1930s, the *Manyberries Chinook* reported that Doc had been rushed to Medicine Hat to undergo emergency surgery for a strangulated hernia. During his convalescence, he impressed the doctors and nurses on staff with his medical knowledge and

kindly personality. The Christmas following this episode, the nurses received turkeys, compliments of the doctor.

His hospital stay also signaled a permanent change in Doc's garb, one most likely recommended by the physician in the Medical Arts Clinic. When he returned to Orion, Doc was suitably



FIRESTORM AND CONTROVERSY: A grain elevator in Orion, where Doc Bartlett nearly died in a 1953 house fire (facing page). Despite his eccentricities, Doc forged enduring friendships, including one with Sidney Dann, pictured above, with whom he liked to argue politics.

dressed in a shirt, tie, jacket, and trousers. He was not, however, suitably washed.

Doc's failure to bathe and his fondness for snooze made him a somewhat pungent dance partner. But despite his odor and difficulty in finding partners, he continued to show up at community dances, where he moved with considerable vigor.

A Fever Pitch

In 1936, at the instigation of the public health doctor and a local widow whose husband had died of Rocky Mountain spotted fever, Doc began to work on developing a vaccine for spotted fever, but ended up using a crude vaccine supplied by the provincial government of Alberta instead. Concocted from infected ticks attenuated with phenol, the vaccine resulted in many local and systemic reactions. Aided by the public health nurse, Doc established spotted fever clinics, where he was assisted by townspeople, nurses, and government doctors.

Doc also provided inoculations for diphtheria and smallpox. And when scarlet fever epidemics raged in the district between 1937 and 1942, Doc once walked the Black and White trail to Medicine Hat, a distance of 50 miles, to obtain a supply of sulfa for four town children who were ill. Braving the prairie winds, dust, and dramatic temperature fluctuations must have been arduous for a man in his sixties.

In 1953, Doc's Orion home caught fire. He was taken to Medicine Hat suffering from severe burns and shock. After a slow recovery, he spent winters in "the Hat" and summers in a newly built Orion house, where he worked in his garden. The Farm Women's Institute—a group of politically and socially minded women—provided him with care. Apparently Doc, having lost everything he owned and very nearly his life in the fire, was their baby.

Doc died on November 10, 1956, at the age of 82. The Medical Association of Medicine Hat had a granite field boulder brought into the Hillside Cemetery as a marker. This stone still marks the grave of one of Alberta's most eccentric and caring physicians. ■

Sterling Haynes, MD, is a retired general practitioner from British Columbia, where he provided medical care to people in rural areas for decades.



The Grand Daddy of Them All

ARTHUR GUYTON '43A ONCE looked forward to a career as a cardiac surgeon. His medical training at HMS had been accelerated because of the shortage of physicians during World War II. During the war, he performed surgery at Bethesda Naval Hospital and conducted research on bacterial warfare at Camp Detrick in Maryland. When the war ended and he was discharged from the Navy, he moved back to Boston, eager to begin his life as a surgeon.

But in late 1946, Guyton was stricken with a severe case of polio. He was sent for intensive rehabilitation to Warm Springs, Georgia, where he remained for seven months. Although he recovered and regained some of his strength and mobility, his right leg, left upper arm, and both shoulders remained paralyzed. His dream of a surgical career was over.

Even while in rehab, however, Guyton turned his attention toward other challenges. He designed a walking brace, a special hoist for polio patients, and a motorized wheelchair controlled by an electric joystick to help patients maneuver more easily. This inventiveness was simply an extension of a childhood passion he had indulged in his youth in Oxford, Mississippi.

"I've always loved to build things," Guyton says. "As a young man I made a lake, then tiny wooden boats to float on it. A great Christmas present for me was a bag of cement, which I could use to build roads."

Guyton passed on his love of building things and mastering new skills to his eight sons and two daughters. He taught them woodworking, electronics, and masonry, and they worked on projects in

a machine shop behind the house. With his guidance, the children learned to build everything from go-carts and ham radios to a swimming pool and a tennis court for their home.

"For science fairs, the children would work in the shop, using the lathe, mill, or welding equipment to make toys, engines, and other devices," Guyton recalls. "We also talked a great deal about physics

and didn't find it at all unusual when his children decided, one after another, to pursue careers in medicine. Education was highly valued in the Guyton household; Arthur credits his wife, Ruth, with instilling a love of learning in the children by reading to them every night.

Yet to help explain why all of his children became doctors, Guyton suggests, "One reason may be that because I had

polio, I was a patient of theirs from the beginning. When my oldest son, David, was about five, his mom would say, 'Go and push your daddy in here.' The children were always there to help. They had a patient of their own, which gave them more of an introduction to medicine than anything I could have taught them."

David Guyton '69, a professor of pediatric ophthalmology at Johns Hopkins, denies ever perceiving his father as a patient. "We never thought of him as handicapped," he says. "He was bright and energetic, and he seemed to know everything about everything."

David recalls his father offering guidance to the children on a variety of projects. In fact, the Guytons built their home in Jackson, Mississippi, based on Arthur's design. "It was the best thing for us to have his brain guiding our hands," David says. "We kids even redid much of our house with my father talking us through it. I value that training."

Arthur Guyton's own father, Billy Guyton, was dean emeritus of the medical school at the University of Mississippi in Oxford. "When I was young, I sometimes worked around my father's office," Arthur recalls. "I watched him work, and tried to learn a little bit of medicine." Arthur's older brother, the late Jack Guyton '37, was also an influence. When



CHIPS OFF THE OLD DOC: All ten of Arthur Guyton's children followed their father's career choice of medicine.

and chemistry, and how these were the bases of engines, motors, and electronics."

One subject they rarely discussed was medicine. And yet, Guyton's children—all ten of them—followed their father's career path and became physicians. All eight sons attended HMS.

The remarkable achievements of the Guyton family have generated substantial media coverage. But Guyton says he



IT TAKES TWO: Guyton ascribes much of his family's success to the warmth and intelligence of his wife, Ruth, who made it a point to read to the children nightly.

Arthur visited his brother at HMS, he became interested in Jack's work.

Guyton's own professional path led him to become a world renowned researcher and teacher. He accepted a teaching position in the Department of Pharmacology at the University of Mississippi's School of Medicine, and later the chairmanship of the Department of Physiology. Guyton taught there until his retirement in 1989. Despite his initial inclination toward surgery, the academic life suited him.

"I was fascinated by physiology," he says. "But I hadn't realized how much fun it would be to teach it. I was almost the same age as the students, so we could talk back and forth easily. It was a wonderful environment."

Guyton also loved to tackle new research topics, and some of his best-known work in cardiovascular physiology challenged long-held beliefs. His research showed, for example, that cardiac output is controlled by peripheral tissues—not the heart, as was the wisdom of the time. Guyton's research also pinpointed the critical role of the kidneys in controlling blood pressure. These discoveries earned him numerous awards, including the Research Achievement Award given by the American Heart Association.

As for the Guyton grandchildren, David says that many of them have learned from

their physician parents the challenges doctors face today, and none has chosen to pursue medicine thus far. "They see how hard we're working," David says. "In a way, our father tricked us all into pursuing medicine. We saw him having a very nice life, home by six, interacting with his family, writing his textbook at night. Dad was comfortable, happy, and commanded respect. Medicine was a natural career for us to pursue."

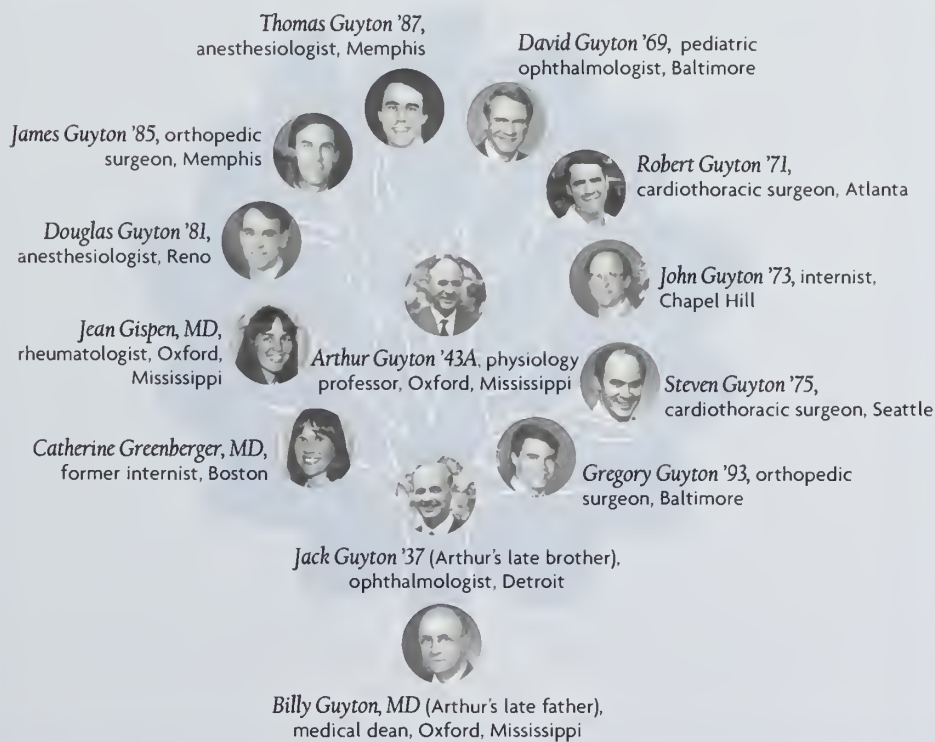
Arthur Guyton is sorry to see the demands today's medicine places on his children. But as a retired physician, he remains passionate about the profession. He is currently at work on the

eleventh edition of his *Textbook of Medical Physiology*, first published in 1956 and since translated into many languages, including Turkish, Indonesian, and Serbo-Croatian. "It's a full-time job trying to keep the book from getting too long," he says.

Guyton's love of learning how things work—from the physiological processes of the body to the mechanical aspects of a boat, wheelchair, or car—and his desire to share that knowledge have remained constant throughout his life. ■

Susan Cassidy is assistant editor of the Harvard Medical Alumni Bulletin.

Is There a Doctor in the House?



Max Kutzer

1936 "I teach bridge at a retirement home two days a week. Also, I am writing two books."

George W. Comstock

1941 "I am still working, though with slightly reduced hours. I am helping with several courses at the Johns Hopkins Bloomberg School of Public Health and continuing research on cancer and tuberculosis in my main office in Hagerstown, Maryland. My avocation is still mainly music (Washington County Museum Recorder Consort; second bassoon in Frederick Orchestra), but hearing loss is threatening both my teaching and music."

Wiley F. Barker

1944 "I am still alive and writing, if not kicking so well: one book on the history of the Society of Clinical Surgery for its 100th anniversary in 2002; an e-book on how to take care of those orchid plants you see in the grocery store; and a write-up of the characters in the Barker family (those of years past). I am still enjoying our rustic 'ranch.' I am active as a consultant to the California Board of Medicine and to the Board of Advisors for UCLA Medical Center, and I make occasional visits to the Peripheral Vascular Service at UCLA."

Eugene B. Brody was part of a multinational mission to Uzbekistan in autumn 2002, under the auspices of several international and Uzbek nongovernmental organizations. The group presented seminars and held informal meetings with

women leaders and local agencies in Tashkent, Samarkand, and Bukhara, focusing on women's rights and responsible parenthood in Uzbekistan. Brody retired as secretary general of the World Federation for Mental Health in 1997 and now serves as the organization's senior consultant, as well as co-chair of its Committee on Responsible Parenthood.

John W. Braasch

1946 "I've finally retired, having put it off for a number of years by starting and running a surgical residency at Lahey Clinic and then working in our cell biology lab (low-level appointment; no Nobel Prize). I am now trying to play tennis and duplicate bridge. Keeping up with my grandchildren is also a full-time job."

William R. Owen

1949 "I play tennis or golf daily. I maintain an office and a sec-

retary, and help defend medical malpractice and personal injury (cardiac-related) litigation. Margaret, our two daughters, and our five grandchildren are well. I'm looking forward to our 55th in 2004."

Ralston R. Hannas, Jr.

1950 "I am the new owner of Montgomery's Irish Pub in Tucson, a great neighborhood restaurant and bar. Come see me when you are in Tucson."

Daniel T. Young

"I have been retired from the University of North Carolina School of Medicine faculty for ten years, but remain in Chapel Hill. We are working here to get laws passed to make adequate health care a right in North Carolina and to require the North Carolina legislature to figure out how to do it."

Charles Bauer

1953 "It was wonderful seeing Bill Temby on his recent visit to



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